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DIRECTORATE OF DISTANCE EDUCATION

MARKETING MANAGEMENT

P.G. DIPLOMA COURSE

Paper - IV

MARKETING RESEARCH

Madurai Kamaraj University
Madurai - 625 021

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Paper IV:

Marketing Research

Syllabus

Introduction to marketing Research - Scientific method - Marketing Research Process- Research design- Experimental design.

Data Collection : Primary data, Secondary data, Data collection Techniques like questionnaire, Schedule etc. Attitude measurement, Observation method - Sampling data collection and field force- processing of data-data analysis and interpretation - presentation of research reports - Application of marketing research - product research - Advertising research - Motivation research - Market and sales analysis research - Future of marketing research.

Marketing Research

Scheme of Lessons

Lesson No	Title
1.	Introduction to Marketing Research
2.	Experimental Design
3.	Attitude Measurement
4.	Data Collection
5.	Data Collection and field force
6.	Sampling Design
7.	Data Processing
8.	Data Analysis and Interpretation
9.	Reporting Research Findings
10.	Product Research
11.	Advertising Research
12.	Market and Sales Analysis Research
13.	Motivation Research
14.	Future of Marketing Research in India

LESSON - 1

INTRODUCTION TO MARKETING RESEARCH

Marketing research has assumed importance in the modern economy where large scale production is carried on and the gap between production and distribution is quite vast. The business situation at present, requires substantial capital investment and marketing expenditure. At the same time, a great deal of uncertainty and risks are associated with them. The success of the business, in such condition, depends to a large extent on the quality of marketing decision, Marketing research provides vital information to the marketing decision making. Marketing research helps the marketing man to understand, investigate, analyses and interpret the marketing problems and take right decision.

Definition

The following definition makes better understanding of the concept 'marketing research'.

American Marketing Association 'Definition Committee defines Marketing Research as a, Systematic gathering, recording and analysis of data about problems relating to the marketing of goods and services'.

Green and Tall define Marketing Research as follows:

" Marketing Research in the systematic and objective research for and analysis of information relevant to the identification and solution of any problem in the field of marketing".

Koteer states that, "Marketing research is systematic problem analysis, model building and fact finding for the purpose of improved decision making and control in the marketing of goods and services".

Meaning

The definition stated above point out that the marketing research is the application of the scientific method to the solution of

marketing problems. It studies people as buyers, sellers and con sumers, examining their attitude, preference, habits and purchasing power. It is also concerned with the channel of distribution, with promotion and pricing, and with the design of the products and services to be marketed.

Market research and marketing research

Market research is a branch of marketing research. It is only a sub-function of marketing research and covers only a few aspects of marketing. Market research is concerned with the investigation and measurement of market demand. It includes the study of size of the market, customer's need and motive, degree of competition, setting activities, details of the customers as to their income, education, dealer preferences etc. In brief, its scope is contained to the study of

1) the habits of the customers

2) the suitability of products and their acceptance in the market.

3) the reactions of the customers on the products and

4) the channel of distribution to be adopted.

Marketing research is used in wider scope and greater importance. It is the systematic gathering, recording and analyzing of data about marketing problems towards the end of providing information useful in marketing decision making. It helps in taking a fruitful and efficient decision as to the flow of goods and services in the hand of the customers.

Scope of marketing research

Marketing research is of comparatively recent origin. This formal marketing research organization was established in USA in 1911. In a short span, it has grown tremendously in methods, methodologies, in the application of statistical techniques and behavioural sciences concepts.

Uses of marketing research

In the present pattern of large scales production, the use of marketing research is widespread. The manufacturer has to know the needs of the consumers, the right type of goods, the price at which the products could be marketed and also the proper channel of distribution. Marketing research helps the company in knowing the market, fitting a product to the market and finally selling the product. Dr. Albert B. Blakenship has, therefore, described marketing research as an, "ancillary service that allows the management to manufacture with a better idea of what can be sold, and how much can be sold, and to market with a better idea of how to combine the various tools of selling to minimize waste". The manufacturer can self-regard his marketing interest through marketing research in the same way as the pilot of an aeroplane uses a number of sophisticated instrument to navigate and fly.

Scientific Method

Scientific method implies an objective, logical and systematic method, i.e., method free from personal bias or prejudice, a method where in the researcher is guided by the rules of logical reasoning, a method where in the investigation proceeds in an orderly manner and a method that implies internal consistency. Marketing research is scientific in its essence. It is a systematic application of the principles of research.

The scientific method in marketing research implies the following aspects;

In order to carry out the research, the researcher must know the basic problem. Formulating a problem is the first step in the research process. The problem must be well defined and properly formulated. A problem 'well defined is half solved'.

2) Marketing information can be collected through secondary and primary sources. The objectives of the research must be borne in mind while collecting data.

3) The relevant population and sample must be defined properly.

4) The tools of data collection, namely questionnaire, interview and observation must be determined before hand.

5) Interpretation of the data collected is the important stage and correct interpretation of data makes a research meaningful. In order to interpret marketing information, suitable avaluation procedures, research techniques and statistical tools must be decided.

6) Based on the available information logical conclusions are to be drawn.

7) At all stages of research, objectivity, consistency and validity of information must be ensured.

Marketing research process

The marketing research process may be viewed as a seven step sequence.

The following are the seven steps

1. Situation analysis

The first step in conducting marketing research is identifying and stating the problem in order to gain a general understanding of the situation. The marketing researcher should examine all available sources of information such as company records, personal library and trade association materials and past research efforts. Some personal interviews can be conducted at this stage with employees of the company.

Situation analysis would point out the symptoms of the central problem which are indicative of deeper issues.

2. Preliminary investigation

It include extensive interviewing in the field. Consumers, dealers and executives from different companies may be varied by

the researcher. Preliminary investigation enables the researcher to understand the dynamics of the intensity and gives a better feel of the market. The goal of the preliminary investigation is to develop one or more hypothesis. A hypothesis is a statement capable of being tested by scientific methods, that relates as independent variable, to some dependent variables. Hypothesis narrows the scope of the research process and defines its central forms.

3. Research Design Selection

A research design is the "specification of methods and procedures for acquiring information method to solve problems. It is perhaps the most important step in the entire marketing research process. If the methods and procedures for the research are insufficient, the resulting data and findings will be inadequate or even misleading. There are three kinds of research design:

i) exploratory research
ii) descriptive research
iii) conclusive research

Depending upon the problem to be studied, any one or a combination of the three can be employed in conducting the formal investigation.

4. Marketing - Data Sources

Once the research problem is identified the marketing researcher must begin the time consuming process of collecting data The researcher must pay attention while deciding which facts are significant and which are irrelevant to the task at hand. A research study may require both primary and secondary data. Collection of primary data involves much money and time and so all secondary sources have to be exhausted first.

Secondary Data : It may be collected from government and trade publications, newspapers, market surveys, sales activity; product costs, inventory data and consumer list. Time factor must be given due weightage while information are collected.

Primary Data : The major methods of gathering primary data are observation, surveys and experiments. In all these methods the researcher comes into contact with the respondents directly.

Observation Method: It is the simplest means of conducting original research. In theory this market is moye accurate and objective than the survey method. The problem of human bias has always been present in this method. Moreover, it is not useful to study the attitudes, opinions and beliefs of those being observed.

Survey Method : The survey method is the most common means of collecting primary marketing data. Surveys are used to plan product designs, advertising copy, sales promotion and other marketing activities. Three kinds of surveys namely telephone interview, marked questionnaire and personal interview are conducted in practice.

Experimental Method : An experiment may be definitions, "the actual trial of a proposed course of action or other hypothesis under consideration that in effect can be observed objectively and distinguished from the effects of continuous variable.

Two groups of subjects generally take part in the experiment namely control group and experimental group. The new stimuli is introduced to one group. Researcher measures the reaction of each group. The difference between them leads to inferences about the impact of selected stimuli.

The most widely used form of the experimental method is test marketing.

5) Information Analysis

The analytical ability of the researcher is crucial to the success of the research project. Once all the information have been collected substantial interpretation will be required from the huge array of data. The marketing researcher tries to find out meaningful patterns from the data through the use of tools like cross tabulation, frequency distribution, averaging and so on.

6) Reporting the findings

Making a good presentation of the result of research studies is as important as collecting and analysing the data itself. The report should include solid evidence that the data presented and the resulting interpretation and conclusions are all sound.

7) Follow up

Many organizations that commission market research studies their findings and recommendation with interest and then do nothing about them. Follow up action assures the implementation of recommendations made by the marketing researcher.

8) Scope and coverage of marketing research activities

The number of possibilities for using marketing research is almost limitless. The following list provides six classification of research.

1) Statistics and market research

The purpose of this classification is mainly to

a) identify markets

b) determine buyer behaviour

c) buyer's attitude

d) measure market potential

e) analyse sales data

f) market share percentage

g) to study selling activities and

h) distribution channel.

2) Business economic and corporate research

This category includes the study of

a) short term business trend

b) long term business trend

c) business forecasts

d) product mix

e) diversification and

f) company wide planning

3) Product research

1) include all research that deals with

a) current products

b) present packing pattern

c) developing new products and services

d) planning new products and services.

4) Advertising research

The category encompasses studies dealing with

a) selection of advertising themes

b) creation of advertising copy.

c) creation of commercial

d) planning of media and

e) planning of expenditure.

5) Corporate responsibility research

This involves studies relating to the

a) responsibility of business houses to the public and

b) various legal questions.

6) Non-business research

This category many kinds of problem faced by government as well by social, political and other organisations that can be analysed with marketing research techniques.

7) Research design

A research design is the first step in planning and marketing research activity. The research design will vary according to the type of marketing research. There are three types of research designs.

(i) Exploratory Research

Studies using exploratory research are designed to identify problems, locate relevant variables and arrive at new hypotheses. The exploratory study will generate data that suggest meaningful research questions.

There are three stages in exploratory research.

1) The first stage consists of studying secondary data courses.

2) The second stage includes interviews with knowledgeable people. Once, the interviews are over, the unique suggestions of each respondent and the aggregate conclusions drawn the majority of the sample will be considered for the research purpose.

3) The last stage involves the study of similar situations including case histories and simulations. Case histories enable the researcher to focus on past marketing approaches to similar problems. With the help of computer, actual marketing situation is simulated in an experimental model.

Descriptive research

Marketing research studies attempt to describe market functions and characteristics. There are three common characteristics of descriptive research studies.

1) Association of two or more key variables such as sales level of income, demographic factors, geographic factors and purchasing pattern are crucial to the firm's marketing strategy.

2) Specific research questions : The researcher begins the study with a through knowledge of the problem and some definite ideas with possible hypotheses and testing methods.

3) Pre-planned and structured design : The descriptive study must be precise and systematic. The research design controls the sources of information and procedures for information gathering.

Conclusive research

It provides the evidence which makes it possible for the decision maker to chalk out the action. One of the limitations of descriptive research is that it does not explain why certain things happen. A descriptive study shows the connection between two or more variables without being able to prove that one is derived from the others. So, in reviewing the correlations of descriptive research, marketing researchers would like to develop evidence to substantiate the apparent causal relationship between the market factors.

Model Questions

1) Explain the various processes of marketing research

2) Discuss the scope and coverage of marketing research

LESSON - 2

EXPERIMENTAL DESIGN

Experimentation is a powerful tool at the disposal of the marketing researchers. Experimentation involves the manipulation of certain independent variables with a view to determine their effect on one or more dependent variables. For example, a pharmaceutical firm may be interested to ascertain the efficacy of a new drug in the treatment of cancer. A group of patients is chosen to whom the drug is administered for a certain period of time. This group is called the test group. Another group of patients, identical to the test group is also chosen, to whom the drug is not administered. This group is known as control group. The firm collects relevant data and analyse the same. The difference in the extent of recovery from cancer between the test group and the control group is attributed to the use of the drug, thereby indicating the extent of its efficacy.

The above example aims to establish the causal relationship between the use of drug, an independent variable and the recovery from cancer, a dependent variable. While conducting an experiment of this type. the firm has created a setting and manipulated the level of the independent variable so that it can compare the variation in the dependent variable.

Definition

Experimentation, thus, can be defined as the research process in which one or more variables are manipulated under conditions which permit the collection of data to show the effects.

Experiments are artificial in the sense that situations are usually created for testing purposes. This artificiality is the essence of the experimental method and it gives researches more control over the factors they are studying. Experiments are much more effect relationship. The experimental designs lend themselves more readily to rational analysis.

Marketing experiments can be conducted in a laboratory or in the field. In laboratory experiments, a marketing researcher tries to create a laboratory setting to carry out his study. For example, a group of consumers are brought to a conference room and exposed to an experimenta[illegible]riable, such as certain programme on television and then the consumers are asked to show their preference for the products.

In field experiments the experimental variable is taken to the field. For example, a new package is tested in a store or a new product is taken to house wises. In each case, some measurement is made of test subject's (housewives) reaction.

In experimental design, the researcher has a hypothesis. If an experimental variable (eg. advertising, display, training etc.) is applied than experimental unit (eg. a group of consumers, a store, sales representatives etc, it will have effect will can be measured (eg. the number of consumers remembers the brand name, units sold etc).

Experimental Designs

The following are some of the most common designs (for marketing research.

1. 'After only ' Designs

This is the simplest of all experimental designs. This design consists of measuring the dependent variable only after the experimental subject have been exposed to the experimental variable.

The experiment carried on by a breakfast dish company in Virginia illustrates this point.

The breakfast dish manufacturer intended to increase his sales. He ran an advertisement in morning and evening newspaper for one week. The advertisement also carried a coupon which could be exchanged for a free coupon of the breakfast cereal. A total of 486 free compons were claimed. It was concluded that the advertisement (experimental variable) produced immediate results.

The 'After only' design can be summarized in the following notation.

	Experimental Group
Experimental Variable Introduced	Yes
After measurement	Yes
Effect of experimental variable	$= x_1$ - before measure

The 'after only' experimental design is often used with new products where the before measurement is zero.

2. Before - after' design

In this design, the researches measure the dependent variable before exposing the subjects to the experimental variable and again, after exposure to the experimental variable. The difference between the two is considered to be measurement of the effect to the experimental variable. This is summarized .n the following notation.

	Experimental Group
Before measurement	Yes(x_1)
Experimentals variable Introduced	Yes
After measurement	Yes (x_2)
Effect of experimental variable	$= x_2 - x_1$

In the before - after design, certain variables might have happened due to a number of factors which are called uncontrolled variables. The factors that could cause the after measurement to differ from the before measurement are discussed below.

Passage of time

If there is longer period of time between the 'before' and 'after' measurements, there is greater danger of the results being confounded.

Maturation

The biological and psychological change which take place with the passage of time are called maturation. The subjects would react differently after measurement than before measurement due to biological or psychological changes regardless of what took place in the interim.

Pre-test

Pre-test effect may endanger the validity of the before-after design. Pre-testing may influence the respondents behaviour in many ways. He may remember the brand selected in the first drawing and choose the same again.

Measurement variables

In projects where interviewers are involved, different interviewers will interview the respondents at different times and variations occur in measurement. However, it measurements are made mechanically, variation will be little.

These four factors raise doubt as to the validity of the conclusions from before - after design.

3. 'Before after control group' design

In this design the experimental group and the control group are selected in such a way that they are similar and interchangeable. The control group and the experimental group are measured simultaneously. But, no experimental variable is introduced to the control group.

An experiment conducted by the National Broadcasting company illustrates this design.

The company selected a sample of 2441 households and conducted interviews at two different times three months apart. Purchases 22 different brands in 11 different household products were determined in each of the two interviews. In the first interview, the percentage of buying one or more of the brands was determined for the entire sample and used an "before measure". In the second interview, the sample was separated into two groups. One group exposed to T.V. and magazine advertising of products and the other group not exposed to the advertising.

The difference between the after and before measurement of the control group was measured and the difference between the after and before measurements in the control group was measured. The effect of experimental variable was determined by subtracting the difference in the two measurements of the control group from the difference in the two measurements of the experimental group.

The 'before - after control group' design may be depicted as follows;

	Experimental Group	Control Group
Before measurement	Yes (x_1)	Yes (y_1)
Experimental variable	Yes	No
After measurement	Yes (x_2)	Yes (y_2)
Effect of experimental variable =	(x_2-x_1)	(y_2 - y_1)

The results of the experiment conducted by the National Broadcasting Company were as follows.

	Experimental Group (Exposed to advt)	Control Group (not exposed to advt)
Before measurement	19.4% (x1)	19.4% (y1)
Experimental variable	Yes	No
After measurement	20.5% (x2)	18. 0% (y2)
Effect of experimental value	= (20.5% - 19.4%)	
	= (10.9% - 19%)	
	= (1.1%) - 2.5%)	
	= 3.6%	

4) 'Four - group - six study' design

In the earlier design mentioned, the experimental and control groups are likely to be influenced in different ways. In order to overcome these shortcomings, a four- group six - study design is introduced. This design can be shown as follows;

	Experimental		Control	
	Group 1	Group 2	Group 1	Group 2
Before measurement	Yes (x_1)	No	Yes (y_1)	No
Experimental value	Yes	Yes	No	No
After measurement	Yes (x_2)	Yes (x_2)	Yes (y_2)	Yes (y_2)

In this design, experimental group 1 and control group 1 form the before after with control group' design. An additional two groups, one experimental and one control are added. Neither is measured before the experimental variable is introduced. The variable is introduced to experimental groups only and all four groups are measured 'after'.

It is presumed that the before measurement' should be the same in all four groups. Therefore, the two before measurements will be approximately equal ($x_1 = y_2$). The average of x_1 and x_2 is taken to be the before measure of experimental group 2 and control group 2. If the after measurement and before measurement of control groups are the same, the experimental value has no influence. If there is difference, it can be inferred that the experimental variable has significant influence.

5) After only with control group design

In this design, the experimental and control groups are selected in such a way as to be equivalent. No 'before' measurement is made in either group. The effect of the experimental variable is determined by computing the difference between the after two measurements. This design can be illustrated as follows.

	Experimental group	Control group
Before measurement	No	No
Experimental variable	Yes	Yes
After measurement	Yes (x_1)	Yes (y_1)
Effect of experimental variable	$x_1 - y_1$	

This design is widely used in marketing research because it is simple to administer and less expensive.

Expect facts design

This design is a variation of the 'after only' design. It differs from the after only design because the experimental and control groups are selected after the experimental variable is introduced instead of before. Since the subjects are exposed to the experimental variable, they cannot be influenced towards the subjects. This design permits the researcher to introduce the experimental variable at his will and to control only observations. This is useful in advertising tests which use commercial media.

Continuous diary panel design

In this design a sample is recruited and information are obtained from the members continuously or at intervals over a period of time. A fixed sample of this type is called a panel. Measurements are taken at intervals and experimental variables are introduced when desired. The result is a design similar to a series of before - after experiments.

This design shows better results when numerous measurements are made both before and after introduction of the experimental variable. Trends can be then established as a base from which the effect of the experimental value can be measured.

Factorial designs

In the experimental designs a single experimental variable is usually considered. Factorial designs permit the experiments to test two or more variables and to determine not only the main effect of each of the variables but also to measure the interaction effects of the variables.

For example, the proper concentration of sugar and flavor in a work drink is to be determined. Various levels of sugar content combined with various levels of flavour is to be tested. If four different degrees of sugar content and four different degrees of flavour are selected as possible characteristics of the final product sixteen different combinations can be made from these variations as shown in the table.

Flavour Intensity	Sugar Content 1	2	3	4
1	A	B	C	D
2	R	F	G	H
3	R	F	G	H
4	M	N	O	P

Each of these variations can be given to a sample of consumers and their reactions are measured on a preference scale.

The following table with hypothetical data describe the results obtained.

Flavour Intensity	Sugar Content			
	1	2	3	4
1	4,0	6,0	5,0	5,6
2	6.1	7.3	5.1	3.8
3	8.1	9.2	8.3	4.6
4	6.2	6.4	6.2	3.2

The second degree of sugar content and third degree of flavour intensity are preferred over other variations. In the illustration given above, two variables were rested in four different levels. The number of levels for each variable is determined by the thoroughness with which the researcher wishes to study the problem.

Latin square

The Latin square is a variation of the factorial design. Its utility arises from its balanced properly. It results in a greater precision in the evaluation of experimental results than it is possible in the experimental design described above.

For example, a researcher wants to determine the effects of three alternative show case arrangements (A, B, C). He plans to do this by observing the sales generated in by each show case in each of three stores in each of three time periods. He designs an experiment so that each show case arrangement it used once in each store and once in each time period.

The following table illustrates these specification.

Time Period	Store 1	Store 2	Store 3
1	A	C	B
2	C	B	A
3	B	A	C

The geometric patterns in which each letter is represented once in each row and each column is called a Latin square. The Latin square above for three treatment is said to be of size 3 x3, referring to the number of rows and columns in the square. Latin squares of all sizes exist. In marketing research 2 x 3 to 6 x 8 squares are useful. The Latin square remove two types of errors namely one relating to time periods and the other associated with different stores

4. Limitation of experimentation

1) The experimentation can not take place without a hypothesis to test. These hypothesis are usually developed from under lying theory developed from observation and description. Theory is available but not adequately. In future the researcher will be able to develop more useful hypothesis and conduct more experiment.

Individual market, people and their preference change from year to year. Therefore, no one know how much time gap is required after the experimental stimuli is introduced to measure the 'after' position of the experiment. Brief experiments measure only short term effects. Most experiment assume that the immediate results measure the effect of the experimental value. But the cumulative effect of advertising which may build goodwill and consumer acceptance over a long period of time cannot be measured. Hence, experiments must cover long periods to cover the after effect of the variables which are not feasible with many business problems.

3) Experimental research is often expensive because it in volves one control group and another experimental group. Some times these groups are to be measured twice or continuously. Thus the cos. of an experiment tends to be greater than that of a descriptive study. If experimental design's effects are to be measured accurately very large samples are necessary which involves a heavy cost.

4) Many administrative problems are encountered in concluding experiments. It is difficult to obtain co-operation from individuals who find these experiments interfere with their normal work. Competitive circumstances may create difficult experimental condition. The competition may learn as much from the test about the new market. If the experiments take longer time, the competitor's adverse reaction will be more evident.

However, experimental method receives much attention from marketing researcher since the results are more likely to relate to specific decision than the descriptive data.

Model question for guidance

Discuss the various typed of designs in marketing research.

LESSON - 3

ATTITUDE MEASUREMENT

The measurement of attitude is central to many market situation. The strategy of market segmentation is often based on attitudinal data. Determining attitude of different market segments towards a product can be essential to developing a 'positioning strategy'. Attitude measurements is often the basis for evaluating the effectiveness of an advertising campaign. The assumed relationship between attitude and behaviour helps in the production of product acceptance and in the development of marketing programmes.

Attitude - Its components

An attitude is an individual's perceptional, evaluative and action oriented processes with respect to an object or phenomenon.

Attitudes are generally considered to have three main components.

i) a cognitive component : a person's beliefs about the object of study such as its durability.

ii) an affirmative component: a person's feeling about the object such as good or bad.

iii) a behavioural component : a person's readiness to respond behaviorally to the object.

Measurement

Measurement may be defined as the assignment of numerical to the characteristics of objects, persons or events according to rules. What is measured is not subject, person or event itself but some characteristics of it.

There are four levels of measurement nominal, ordinal, interval and ratio.

Nominal measurement

Nominal measurement classifies persons, objects or events into a number of mutually exclusive categories on the basis of the presence or absence, possession or non-possession of certain property. For example, the population of a town may be classified according to sex into males and females. This measurement assign mutually exclusive labels to identity objects. These labels only tells us that the categories are qualitatively different from each other and they do not have quantitative significance.

Ordinal measurement

In ordinal measurement numerals, letters of other symbols are used to rank objects. Ordinal data indicate the relative position of two or more objects on some characteristics. A significance amount of marketing research particularly consumes oriented research reflection on this type of data. For example, consumers may be asked to rank references for several brands, flavour or package designs. However, ordinal measurements do not provide information on how much more or less of the characteristic various objects posses.

Interval measurement

An interval scale involves the use of numbers to rank objects or events such that the distance between the numerals correspond to the distance between the objects or events on the characteristic being measured. Interval scale possess all the requirements of an ordinal scale plus the 'equality of difference' characteristic of the number system. But, interval scale can have an arbitrary zero. The lack of true zero limits the capacity to measure the complete absence of a characteristic. The Fahron heir temperature scale is an example of an interval scale. One can say that an increase in temperature from 30° to 40° involves as an increase from 60° to 70° but one can not say that the temperature of 0° is twice as warm as the temperature of 30°. Because both numbers are dependent on the zero on the scale that is set arbitrarily.

Ratio measurement

This measurement, besides possessing the property of the interval measurement possesses one additional property, viz., it has true, natural of absolute zero point. A true zero means that the object measuring zero possess none of the property in question. Heigh and Weight are obvious examples. Other common examples are sales, cost, number of purchases etc. With a ratio measurement the comparison of absolute magnitude of the numbers becomes possible.

Scales

The instrument with the help of which the attitude is measured is called a scale. Broadly, there are two types of scales.

1) Rating scales

2) Indirect scales

Rating Scale

In a rating scale, the respondent makes a judgement about some characteristics of a subject and places him directly on some point of scale. Numerical values may be part of the scale or be assigned after the respondent complete sell rating job. These scales can be (i) Graphic Rating Scale (ii) Verbal Rating Scale (iii) Rank order Scale (iv) Paired Comparison Scale (vi) Semantic Differential Scale.

Graphic Rating Scale

A graphic rating scale requires the respondent to indicate their position as a continuous rating scale which ranges, from one extreme of the attitude in question to the other extreme. For example, this scale can be used to conduct a study to determine the attitude towards Indian goods as compared to foreign goods. The format of the graphic rating scale is as varied as the imagination of the researchers who devise such scales.

A model formats of the scale is illustrated here.

Fig 1

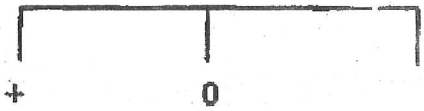

Fig 1 presents a positive -negative continuum. The respondents are asked to indicate their position by checking a location on this continuum. Once the judgements are recorded, the researcher can sub divide the continuants into an appropriate set of categories and assign numerals to the judgements.

Verbal Rating Scale

Verbal rating scales are the most frequently used scales in marketing research. In this scale, the respondents are required to indicate their positions to selecting among verbally identified categories. There is no hard and fast rule with regard to the number of categories but in practice scales of five or six categories are typical. Example of Verbal Rating Scale;

Δ very favourable

Δ somewhat favourable

Δ indifferent

Δ somewhat unfavourable

Δ very favourable

The respondents are asked to tick the box adjacent to the phrase which best correspond to their reaction given in the question at hand. Major issues to be remembered while contributing the scale are (1) the number of categories (2) odd or even number of scale (3) event of verbal description of a category and (4) forced versus non forced scale.

1) To practice scales of five are typical.

2) If an odd number is selected the middle category is identified as neutral position.

3) A balanced scale has the same number of favourable categories as unfavourable categories.

4) A forced scale requires all respondents to indicate a position on the attitude scale.

Rank order scale

The rank- order scale involves the respondent to rank various objects with regard to the attitude in question. For example, the respondents may be required to rank five advertisement with regard to either awareness of liking for, preference for, or intention to buy the product advertised. The technique is widely used to marketing research.

Advantages

1) It is simple is concept, easy to administer and less time consuming to administer than other comparative technique. This technique is similar to the purchase decision process and forces respondents to discriminate among products in a realistic manner.

Paired comparison scale

Under this technique the respondents are presented two objects and required to express their opinion by making a choice between two objects, say, between a new flavour of soft drink and an established brand of drink. When there are more then stimuli to judge, the number of judgements required in a paired comparison is given by the formula:

$$N = \frac{n(n-1)}{2}$$

N = Number of judgements

p = number of stimuli on objects to be judged.

For example, if six liquid dish washing detergent brands are to be compared for 'greatleness on the brands. 15 paired comparisons are possible. The respondents are required to compare all possible pairs of the objects.

Table 1. matrix presents paired comparison data for five brands of soaps, A, B, C, D, & E. The study was conducted to select the soap which has high fragrance.

Table 1

Matrix

	A	B	C	D	E
A	-	90	64	14	27
B	10	-	32	2	21
C	36	68	-	15	36
D	86	98	85		52
E	73	79	64	43	-

Each cell in matrix represents the proportion of respondents who believed that the 'column' brand has more of attribute in question than the 'row' brand. For example, in the brand A versus B comparison, 90 respondents believed that brand B has high fragrance than A. The column proportion reveals that brand B dominates the order brand in this attributes.

The paired comparison technique has limitations. As the number of objects increases arithmetically, the number of paired comparison increases geometrically. Consequently, the technique is limited to a small number of objects. In addition, the order in which the objects are presented can bias the results.

Semantic Differential Scale

This is one of the most popular attribute measurements technique in marketing research. This scale is mainly applied in connection with company and brand images studies. This scale was developed by Charles. E. Oxgnod. The scale requires the respondents to evaluate an object on a seven point scale bounded at each end by bi-polar an adjectives. For instances, the semantic differential scale items for analysing the attitudes towards Show Room X may be shown as under:

Show Room X								
Reliable	--	---	x	---	---	---	---	unreliable
Friendly	x	---	---	---	---	---	---	Unfriendly
Modern	---	---	---	---	x	---	---	Old fashioned
Inexpensive	---	---	---	---	---	x	---	Expensive
Progressive	---	---	---	x	---	---	---	Non - Progres sive

The respondents are asked to check the blank location which most accurately reflects their position regarding the object in connection with each of the bipolar adjectives.

This position on the scale can be assigned a numerical value, such as 7, 6, 5, 4, 3, 2, 1 or +3, +2, +1, 0, -1, -2, -3. The assumption is that the respondents judgement can be treated on interval data which makes possible the calculation of the arithmetic mean for an object on each scale.

Semantic differential scale is quite popular due to its versatility and simplicity. This technique is easy to develop and administer. It is found to be a discriminating and reliable research tool.

Indirect Scales

The scaling technique previously discussed require the respondents to report directly what their position is regarding the attitude in question. However, in certain circumstances, respondents may not accurately report their position using direct measurement techniques. In order to overcome this limitation indirect scaling techniques have been developed. Indirect scales combine the respondent's to judgements on several questions in order to develop a measure of their position on the attitude in question. Indirect scales are commonly called attitude scales.

There are two main types of indirect scaling techniques.

1. Likert's method of summated rating.

2. Thurstone's method of equal appearing intervals.

The Likert Scale

The Likert scale consist of a number of statements related to the attitude in question. The respondents are asked to respond to each of the statements in terms of several degree, usually five degrees of agreement or disagreement. The responses are given a numerical score that will reflect the direction of the person's attitude on each statement. The respondent's total score is compared by summing up scores for all statements.

The following example on attitude towards hot cereal illustrate the use of Likert Scale.

Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1) Hot cereal has a tasted like					
2) Hot cereal is a mess to make					
3) Hot cereal is sticky					
4) Hot cereal is expensive					
5) Hot cereal is high in vitamins					

Each points on the scale carries a score. Response indicating the least favourable degree is given the least score (one) and the most favourable is given the highest score (five). These score values are not normally printed on the instrument. Thus scale value is assigned to each of the five responses. The same thing is done in respect of each and every statement in the instrument. This way the instrument yields a total sum for each respondent, which would measure the respondent's attitude.

The Likert scale has several advantages. It is reasonably easy to construct and administer. It is considered more reliable and provides more information and data than other scales. Likert type scale takes much less time to construct.

Likert scales are of ordinal type and it is not possible to measure the difference between attitude. Another disadvantage is that similar scores can be achieved through varying combination of responses.

Thurstone Type Scales :

This scale consists of 15 to 20 statements which form a continuum of attitudes toward a subject ranging from the most favourable to the least favourable. For example, the following statements may be given to measure the attitude towards television commercial.

1) All T.V. commercials should be prohibited by law
2) Watching T.V.commercials is a complete waste of time
3) Most T.V. commercials are miserably bad
4) T.V.commercials are monotonous
5) T.V. commercials do not interfere with T.V.entertainment
6) T.V.commercials are likeable.
7) T.V.commercials are highly interesting
8) I buy products advertised on T.V
9) Many T.V.commercials enable people to select good products
10) T.V. commercials are more interesting than regular programmes.
11) I have no opinion about T.V.commercials.

The respondents are asked to check only those statements with which they agree. The scale values are not shown on the schedule. A respondent's score is equal to the average of scale the attached to the item he endores. The average may by either the median or the mean.

If a respondent agreed with three statements with scores 8.2. 8.7 and 9.8 the person's attitude score would be 8.9. Since the scale value 6 represents a neutral attitude, the conclusion would be that the respondent had a favourable attitude towards the issue in question.

Thurstone scales are not widely used in marketing research because it is quite time consuming to prepare them. It also involves higher coal. The scale does not allow subjects to express the intensity of their feelings. The scale values assigned to statements are influenced by the attitudes, background and intelligence of judges. Hence Likert scales are considered to be superior to Thurstone type scales.

Multi- dimensional scaling

This term refers to describe a group of analytical techniques used to study consumer attitudes particularly attitudes relating to perceptions and preferences. These techniques identify the product attributes that are important to consumers and to measure their relative importance. Multi-dimensional scaling has wider application in market segmentation, product life cycle, vendor evaluation and advertising media selection. They are useful in studying questions of the following types;

1) What are the different attributes in a given class of product (health drink fast food, ready to serve food soft drinks)?

2) Which brands compete with each other?

3) Will consumer prefer a new brand with new attributes not found in competing products?

4) Are sales efforts and advertising messages are balanced towards consumer perceptions?

The main disadvantage with this scale is complexity in date generation and analysis. Hence it is not popular with researchers.

Model questions for guidance

1) Define attitude and its components

2) Explain the working of Likert's scale

3) Describe the structure of Thurstone's sclae

LESSON - 4 .

DATA COLLECTION

The task of data collection begins once the marketing research problem is defined and a suitable design is evalued. The kinds of information required can be classified into

1) Secondary data

2) Primary data

Secondary data

The secondary data are these which have been already collected by somebody. The nature of the data collection work is merely that of compilation. Some of the sources of secondary data are the following.

1) Trade journals

2) Directories

3) Chamber of commerce and trade associations

4) Government departments and similar bodies

5) Specialised libraries of foreign embassies and trade missions.

6) Internal sources like sales records, purchase records and pricing policies.

7) Salesman's report

8) International agencies like regional economic commissions of the United Nations.

3) Primary data

The primary data re those which are collected a fresh and for the first time and thus happen to be original in character.

Methods of Collecting Data

There are several methods of collecting primary data and the important ones are

1) observation method

2) interview method

3) questionnaire and

4) schedule

each method is briefly explained in the following paragraphs.

Observation method

Observation becomes a scientific tool and a method of data collection for a researcher, when it serves a formulated research purpose and is systematically planned and recorded. Under this method, the investigation collects information through direct observation without asking anything from the respondents. For example, in a study relating to consumer behaviour, the investigator instead of asking the brand of wrist watch used by the respondent, may look at the watch itself.

Advantages

1) If it is done accurately the subjective bias is eliminated in this method.
2) Data collected through this method is related to current happenings.
3) This methods does not require the active co-operation of respondents.

Disadvantages

1) It is an expensive method.

2) It provides limited data

3) Unforeseen factors may thwart the observation.

Methods of observation

Observational studies can be classified on the following basis.

1. Structured Observation

Structured observation is used mainly in studies starting with specific formulations. Since the situation and the problem are already specified, the observer is in a position to set up in advance the categories in terms of which he wishes to analyse the situation.

2. Unstructured observation

When observation is to take place without the above mentioned characteristics to be thought of in advance the same is termed as unstructured observation.

3. Participant type of observation

The observation is called the participant observation when the observer becomes the member of the group he is observing.

There are several merits of the participant type of observation. (i) The observer is unable to record the natural behaviour of they group. (ii) The researcher can even verify the truth of statements (ii) The researcher can gather information which could not be easily obtained if he observes in a disinterested fashion. But the possibility of losing objectivity is always there once the observer participates emotionally.

4. Non-participant observation

In this type the observes as a detached emissary without any attempt on his part to experience though participation. Observation of this type is termed as non-participant observation.

5. Uncontrolled observation

If the observation takes place in the natural setting it is termed as uncontrolled observation. Precision instruments cannot be used in this type of observation.

6. Controlled observation

When observation takes place according to definite pre-arranged plans involving experimental procedure the same is termed as controlled observation. In controlled observation, precision instruments are used as aid to accuracy and standardization. It provides formalized plans upon which generalizations can be built with the same degree of assurance.

Interview Method

In simple terms, it is "conversation with a purpose". Interviewing is fundamentally "a process of social interaction". "Interviewing is a mutual view of each other". Interview method is widely used in the studies on market operations, the attitudes and perceptions of consumers, their expectations, and their expectations and their anticipated behaviour. This method is used through.

(i) Personal interviews and

(ii) telephone interviews

Personal interview

In personal interview, the interviewer asks questions to the respondents in a face to face situation. The interviewer contacts the respondents asks questions and records their responses. The questions should be asked in a clear manner and recorded accurately, Recording of responses can be done either during of after the interview.

Advantages

1) It is a flexible method.

2) More information regarding the products, attitude of the consumer, behaviours anticipated demand can be obtained.

3) Personal and delicate information can be asked in person.

4) Misinterpretations are less likely.

Telephone Interview

A telephone interview consists of an interviewer asking questions of one or more respondents through telephone instead of by direct personnel contact. This method is quite efficient because of its economy and its application to a wide range of information needs. The main limitation of a telephone interview relate so the limited amount of data that can be obtained and the potential bias that can result from an incomplete list of the target population. Another disadvantage of telephone interview is that it is restricted in length.

Structured interview

It involves the use of a set of predetermined questions and of highly standardized techniques of recording. The interviewer follows a rigid procedure laid down, asking questions in a form and order prescribed. It is economical and provides a safe basis for generalization and it requires relatively lesser skill on the part of the interviewer.

Unstructured interview

This method is flexible compared to structured interview. The interviewer is allowed much greater freedom to ask supplementary questions depending upon the situation. But the analysis of constructed responses becomes more difficult and time consuming.

Limitation of the interview method

The interview method for its success mainly depends on the individual researcher for the data collection. In spite of the best efforts, personal bias cannot be totally eliminated in this method. Too much reliance on individual and his memory may lead to distortion and misinterpretation of data. It gives scope for doubting the reliability and the validity of the research findings based on this method. Moreover the tools are not sufficiently sophisticate.

Questionnaire

A questionnaire is a list questions sent to a number of persons for their answers and it obtains standardised results that can be tabulated and treated statistically. It is a fairly reliable tool for gathering data from large diverse varied and scattered group. It is used in obtaining quantitative and quantitative data, Mailed questionnaires are flexible in their approach and relatively low in cost. It's main disadvantage is related to the problem of non response.

A questionnaire may be prepared and mailed to people in any location at the time. Cost per person includes the cost of preparing the questionnaire, addressing the letter and the postage paid. The respondent may give confidential information since they can remain anonymous.

Additional limitations are the length of time required to complete the study and the inability to ensure whether the questions are understood fully and answers recorded fully. It can be used only when the respondents are educated and co-operative.

Essentials of a good questionnaire

1) A questionnaire should be simple and short.

2) Questions must proceed in logical sequence moving from easy to difficult questions.

3) Personal and intimate questions should be brought to the end.

4) Technical signs must be totally avoided.

5) Leading questions must be avoided.

6) Dichotomous and multiple choice questions in the questionnaire which indicate the reliability of the respondent.

7) There should be some control questions in the questionnaire which indicate the reliability of the respondent.

8) Adequate space for answer should be provided in the questionnaire.

9) Brief directions with regard to filling up the questionnaire should invariably be given in the questionnaire iteelf.

10) The physical appearance of the questionnaire should be kept attractive.

Schedule

A schedule refers to a form of questionnaire which is generally filled in by the researcher or by the interviewer himself. He sits with the informant face to face and fills in the form. The researcher assists the respondent in the interpretation of questions. The fundamental difference between a questionnaire and a schedule lies in the method differences between the method of filling the form containing a set of questions. A questionnaire is self administered whereas a schedule is not. Otherwise, there is not much difference between the two devices.

Questionnaire and schedules are increasingly used for the collection of varied and diverse data in marketing research. They enable the marketing researcher to quantity qualitative social behaviour.

Model question for guidance

1) Explain the personal interview method of data collection.

LESSON - 5

DATA COLLECTION AND FIELD FORCE

The field operation is that phase of the project during which researchers make contact with the respondents; administer the data collection instruments, record the data, return the data to a central location for processing. The field operation is to be administered well, Otherwise, the research design and the skill involved in developing the data instrument will become a waste.

Planning field operations

There are four aspects of planning field operations.

Time Schedule

Every project must have a schedule specifying a) when the project is to begin and end and (b) the sequence of activities within this time frame. The number of days needed to complete various activities must be estimated and the degree of overlapping among the activities determined.

Budget

The budget involves the assignment of costs of specific activities identified in the filed work. The cost involved in various stages of data collection process are : a) pretest (b) selection and hiring of interviewers (c) interviewer training (d) final field report and (e) data collection.

Personnel

Skilled personnel are required, along with the clear assignment of responsibility for all aspects of the plan. The personnel must clearly understand what is expected of them and how this performance will be measured.

Performance measurement

To control fields activities, clear performance measures are required. It is important to specify the number of interviews to be completed, the number of expected refusal, non contacts and other non-interviewing situation.

Data collection methods

i) Personal Interview : Research directors have three options for getting their field operation done-they can use their own research organization, contract with an outside fieldwork agency or do both. Field work involves the selection, training, supervision and evaluation of individuals who collect data in the field. Finding qualified interviewers is a difficult task. First, the researcher must specify the job qualifications needed for the project. Next, applicants's must be located, screened and hired in those geographic locations required by the sampling plan. Once, their interviewers are selected, they must be trained, The objective of training is to establish a high degree of uniformity in the data collection process among interviewers. Most of the training programmes consist of written instructions covering areas such the purpose of the study, how to carry out the sampling plan and how to approach the respondent, establish rapport, ask the questioned etc.

After the training programme, the interviewer begins the interviewing process. During the process, there should be constant monitoring to determine whether the interviewing is adhering to plan completed interview forms are to be checked with regard to accuracy, neatness, completeness etc.

ii) Telephone Interview : Most of the issues involved in the selection, training and supervision of personal interviews are the same as the telephone interviews. If the interviews are to be conducted from a central location, the ability to control the field work is an important aspect.

iii) Mailed Interview : The data collection process are under the control of the researcher. The interviewer is eliminated from the

field operation. Consequently the mail surveys are likely to stay within budget and meet the time schedule.

3. Errors in filed work

The main sources of errors in the field work are 1) Sample Selection Errors

2) Non-response error

3) Interviewing error

4) Errors in recording answers

Sample Selection Errors

The non-probability sampling procedure is common in marketing research. This procedure requires the interviewers to select the individuals to be included in the study. In quota sampling, interviewer selects the individuals to be included in the study, subject to various quotas specified in the sampling plan. The interviewer's control of the sample selection process is likely to result in respondent selection error.

Despite the formal quotas and procedure for sample selection, interviewers tend to select respondents who are most convenient or offer least resistance. One study shows that when interviewers were given economic level quota, they selected only people in middle income levels and avoided high and low income respondents. When the number of control get beyond three or four, the field workers find difficulty in locating respondents who meet all characteristics prescribed. As a result they Fend to push a 35 year old into the 40 and over group and the vice - versa.

Probability sampling which appears to eliminate sample selection error still contains the potential for error. For instance, while preparing the list of dwelling units the interviewers may under- list low income group. One study pointed out a 13% under - listing in such income blocks. Random selection procedures for selection from the list are also biased by interviewer in favour of middle income

group. With in the middle income group they tend to select the more accessible persons in the unit in both telephone and personal interviews.

Non- response error

Non-response error refers to the difference between those who respond to a survey and those who do not respond. It is one of the most serious error confronting the researcher.

Non-response can result from (a) non- at homes (b) refusals and (c) Unsuitable to interview. Non-response problems are increasing. In the 1960s, researchers obtained 80 to 85% completion of surveys with three of four call-backs. In 1970s response rates have dropped to 60 to 65%.

a) Not-at-homes : Only one fourth of the calls by either telephone or door- to door were completed on the first attempt. Over 75% of the households which are ultimately reached for sample had been reached by the fourth personal call and the fifth telephone call. Failure to include not-at homes may bias survey result because population group vary in this probability of being at home.

b) Refusal : Refusals are often the result of personality and mood. Repeated efforts to obtain compliance can reduce the refusal rate. Refusal rates have shown upward trend since 1950 by 80% in small town to 21% in metropolitan areas.

Treatment of non-response

Proper field methods can reduce the non-response rate but can not eliminate the problem completely. So definite provision to reduce non-response should be provided. But call backs are the only useful method of obtaining information. This applies to both telephone and door-to-door personal interview. Care in construction of the questionnaire particularly in pre-testing can reduce the number of refusals. Training of interviews with 'refusal,' in mind can also reduce the refusal rate.

4. Interview Errors

Within the personal and telephone interview, the interviewer can be a serious source or error. This error is related to a) Interviewer Respondent Rapport b) Asking questions c) Recording Response and d) Cheating .

a) Interviewer - Respondent Rapport : An interview involves a social interaction between two people. During the interaction, the respondent's perception of the interviewer can affect the later's ability to establish rapport. Interviewers who can establish effective relationship with the respondent are able to collect more complete and accurate data. The more the interviewer and the respondent have in common the greater the opportunity for rapport. This does not mean that respondents need to see interviewers as similar to themselves, but they must view interviewers as capable of understanding their points of view.

b) Asking questions : In asking questions, interviewers are expected to follow certain rules. A set of such rules are as follows :

1) The interviewer must study the questionnaire carefully. Each question must be read without error. The questions must be read naturally and in a conventional mode.

2) Each question must be asked exactly as worded in the questionnaire Even a slight change in working can distort results.

3) The interviewer must not comment on the question meaning or indicate in any way what kinds of answers that might be accepted.

4) Ask the questions in the order in which they are presented in the questionnaire.

5) Ask every question specified in the questionnaire, even when it has been clearly answered previously.

6) At times the interviewer may find respondents misunderstand or misinterpret what is asked and reluctant to give a complete answers. To overcome this problem the interviewer can make use of natural probing techniques. Probing techniques are intended to perform two functions. i) motivate respondent focus on the specific content of the interview so that irrelevant or unnecessary data can be avoided.

Several kinds of neutral probing may be used to stimulate a fuller and clear responses. Some of the neutral problems are :

a) Repeating the question

b) Repeating the respondent's reply

c) Reassure the respondents when they hesitate to respond

d) Asking for further clarification and

e) The interviewer's silence is an effective (step to indicate to the) respondent that a more complete response is expected.

7) If the interviewer makes any changes in the wording, phrasing or order of questions, they should be clearly noted on questionnaire.

8) Provide a logical reason for collecting personal data :

a) Recording Answers : The interviewer may conduct an error free interview. But there may be errors in recording the answers. The following rules may be followed to avoid errors in recording .

Rules for recording responses

The interviewer should record not only what was said but also how it was said. Six rules are designed to accomplish this type of recording.

1) Record response during interview

2) Use the respondent's own words

3) Do not summarize the answer

4) Include everything that pertains to the question's objective

5) Include all probes and comments by entering them next to the question

6) Hold the respondent's interest by repeating the response as is written down.

Recording of information is more accurate in telephone surveys because interviewers can have all appropriate materials and tables on which to write. If the response, are directly recorded into computer, recording will be perfect.

d) Cheating

Cheating is a major problem is personal interview. Cheating is hard to define. The most glaring example of cheating is the interviewer who sits at home and fills out the questionnaire. Cheating may also be falsification of certain data within the questionnaire. Because of the difficulty of supervising door-to door interviewers, cheating becomes a problem. Cheating may present at any point in the interviewing process, including enumeration of dwelling units, selection of dwelling units, selection of respondents and actual interviewing.

The causes of cheating are personality character inherent in the interviewers themselves, difficulty to locate the respondents inadequate training, not knowing fully what is expected of them etc., The researcher should find the factors that may cause cheating and try to reduce or eliminate them.

4) Minimising field work errors

There are certain administrative and control procedures which can reduce the errors and improve the overall quality of filed work. Most research organizations pay attention to the five factors.

i) Selection and training field workers

ii) Administrative procedures for handling projects in the files

iii) Supervision of field workers

iv) Quality and cost control

v) Validation of field work.

Administrative control of projects and evaluation on interviewers are discussed here.

Administrative control of projects

Some research organization maintain a staff of field workers. Some other contract out the field work to organization specializing in that work. Some field work organizations maintain a national organization and some others have lists of independent supervision who have group of interviewers in their local area. When a project is approaching the field stage, the organization to be used is alerted.

The field work starts when the researchers, send materials to field work supervision who in turn send them to interviewers, interviewer turns the completed questionnaire daily to local supervisors. These are tabulated to provide a running total of completed interview by interviewers and for the project. As complet questionnaire begins to come they are edited. Mistakes are corrected before further interviews are made. Supervisors should keep daily records on the number of calls made, number of not-at homes and number of refusals. To ensure quality control, supervisors should see that the sampling procedure is being followed. Questionnaires should be examined to see whether all appropriate questions have been completed, whether incomplete or unsatisfactory answers have been accepted without sufficient probing and whether writing is legible.

In telephone surveys, monitoring equipments permit a small number of supervisors to listen to on going interviews and to provide any correction needed as soon as the interview is over. The samples are identified by telephone numbers. Everyday the status

of each number is put into the computer which generate a daily report showing interviews completed, the number left out, response rates and work completed by each interviewer.

In telephone surveys close supervision is possible and so cheating is not a big problem. In interviews, it is not easy to detect cheating. The local supervisors can detect cheating by phoning sample of respondents and asking if they were interviewed. When interviewers are spread over too wide area, post cards can be mailed asking the interviewers to acknowledge the receipt of the cards.

Evaluation of interviewers

An interviewer can be rated on several factors. The most important factors are cost, refusal and following instructions. The total cost per completed interviewer can be the basis for comparison of interviewers. The percentage of refusals can be compared among the interviewers. The interviewer can be graded on the basis of number of mistakes made. The interviewers performance on the reference of response recorded in open ended question, acceptance of unsatisfactory answer etc., can be the basis for gradation. However this is not a completely satisfactory method.

Model question for guidance

1) Discuss the various types of errors in data collection

LESSON - 6

SAMPLING DESIGN

Once the researcher has formulated the problem and developed a research design he has to decide whether the information is to be collected from all the people comprising the population. In case, the data are collected from each number of the population of interest, it is known as census survey. On the other hand, data are to be collected only from some members of the population it is known as the sample survey. Thus the researcher has to decide whether to conduct a census or a sample survey to collect data for the study.

Some Basic Terms

1) Population: The term population refers to any finite or infinite collection of individuals; E.g.. Population in a city-owners of flat.

2) Sampling unit : One of the units into which an aggregate is divided for the purpose of sampling each unit being regarded as individual and indivisible when the selection is made. E.g., households, persons, etc.

3) Frame : A list, map or other specification of the unit which constitute the available information relating to the population designated for a particular sampling scheme. Eg. Telephone Directory.

4) Sampling design : It is a definite plan for obtaining a sample from the sampling frame. It refers to the technique or procedure the researcher would adopt in selecting the items for the sample.

Advantages of Sampling

Sampling is used very frequently in marketing research because it offer some benefits over taking a census.

1) **Economy in expenditure**

Survey of small number of respondents requires less money. For instance, in establishing a brand preference for soap, it would cost much time and money to ask every person in the country. If data are collected from a small sample of the universe, the expenditure would be less and hence economical.

2) **Saving of time**

Survey of smaller number of units requires much less time than census method. The data can be collected and summarised more quickly by studying sample than studying the universe. This may be a vital consideration when the information is urgently needed or the result of the study has to be declared quite early.

3) **Greater accuracy**

The results drawn by sampling technique are more reliable than the results from census method. The smaller the study, the more likely we are to obtain more highly skilled people for each stage of the research process. If the sample has been properly selected, the results are within a very close range of accuracy.

4) **Detailed study**

When the number of units is large, detailed study is not possible. The smaller number permits a more minute observation and detailed study.

5. **Practicability**

When the universe is extremely larger sampling is the only practical method of analysis. It would be a tremendous job to interview every person in a town to know about his preference for tea or coffee to know about is population. The only practical procedure is to study a samples.

6. The Sampling Process

An over view of the steps in selecting a sample.

Step : 1. Define the population

2. Identity the sampling frame

3. Decide on sample size

4. Select a sampling plan

5. Select the sample.

1. Define the population

Population may be defined as the larger group which the researcher wants to know about studying one or more of its samples. The population must be defined in terms of elements, sampling unit, extent and time. For example, if we were to conduct a survey on consumption of tea in Tamilnadu, the population may be defined as follows;

Element	:	House wives
Sample unit	:	House holds
Extent	:	Tamilnadu
Time	:	3 Months

2) Identify sampling frame

In marketing research most of the frames are from census reports, electoral register, telephone directory, list of members of trade and industry association, list of member of professional bodies, list of dwelling units maintained by local bodies etc. If the frame is incomplete or otherwise detective, sampling will not be able the overcome the shortcomings.

3) Decide on a sample size

Here, on has to decide how many elements of target population are to be included in the sample.

4) Select a sampling plan

The operational procedure for the selection of the sampling are selected.

5) This is the final step in the sampling process. The office and field work necessary for the selection of the sample are carried out at this stage.

5. Types of sampling designs

The samples designs are basically of two types viz., probability sampling and non-profitability sampling.

In probability sampling each element of the population has a chance of being selected for the sample. In non-probability sampling, the selection of a population elements for a sample in influenced by personal judgement.

Major probability or random sampling are:

1) Simple random sampling

2) Systematic sampling

3) Stratified random sampling

4) Stratified random sampling

5) Cluster sampling

6) Area sampling

7) Sequential sampling

Random sampling

Under the sampling design, every item of the universe has equal chance of inclusion in the sample. There is absolutely no room for personal bias, subjectively or favoritism when units are selected at random. But a haphazard selection of individuals of the population does not make a random sample. Care must be taken to see that the human bias does not enter the selection.

How to select a random sample?

There are two methods of drawing a random sample

1) Lottery method

2) Random numbers.

To the lottery method, each unit of the population is numbered and shown on a chit of papers of disc. The chits are folded and put in a box from which a sample or requisits number is drawn.

In the second method, the tables of random numbers are used. The members of the population are numbered from 1 to N from which in members are selected.

Systematic Sampling

A systematic sample is formed by selecting every in the item from the universe where in refers to the sampling interval. The sampling interval can be determined by dividing the size of the universe by the size of the sample to be chosen. For example, if we withdraw a saimple of 20 industrialists from a list of trade association having 100 members, the sample interval would be 5: that is every 5th members in the list would have to be selected.

Systematic sampling is an improvement over a simple random sample. This method is simple to follow. It distributes the sampling more evenly over the entire listed population. It is also a less costlier method and can be conveniently used even in case of large population.

Stratified Sampling

If a population from which a sample is to be drawn does not constitute a homogeneous group, stratified sampling is generally applied. Under stratified sampling, the population is divided into several sub - population that are individually more homogeneous than the total population and than we select from each stratum using random method.

Process of stratifying: The success of stratified sampling depends upon formation of strata. First, we should note the different variables involved in the study of the problem. The common variables used for stratification are generally sex, income, regions etc. In selecting the variables, it is to be noted that they are related to the study.

The size of each stratum is the universe should be large enough to provide selection of items on random basis.

There should be perfect homogeneity in different units of strata.

It is desirable that number of items to be selected from each stratum should be in the same ratio as the total number units in the stratus best to the units in whole universe.

Disproportionate stratified sampling

According to this method equal number of units are taken from each stratum regardless of the size of strata in proportionate to universe. In practice, this method is followed when sampling from a highly, variable universe, wherein, the measurement differs greatly from stratum to stratum. The disproportionate stratified sampling size permits inter strata comparison.

Advantages

The stratified sample is superior to a sample random sample because it ensures representation of all groups and so more representative of the population which is being sampled.

Disadvantages

1) There is always possibility of faulty classification and hence increase is variability.

2) It is costly to prepare stratified list of all members.

3) Difficulty may be experienced in putting a particular case in a stratum.

Stratified sampling is moderately used in marketing research.

Cluster Sampling

Cluster sampling consists, first, dividing the population in the mutually exclusive and collectively exhaustive groups (called cluster). Then, a cluster or groups of elements within each cluster are chosen at random to make up the sample.

For example, if a survey is to be conducted in a city to collect data from individual households, a few localities are chosen first. Then all the households, in these locality are covered in the sample. Cluster sampling is diametrically opposed to stratified sampling.

In the random sampling, the elements that form the samples are selected individually but in cluster sampling entier groups or clusters are selected at random.

A cluster sample study is less expensive and time consuming because the field work is localized. It does not require a complete frame of the whole population. It requires a list of members of the selected cluster only.

But the requirement of heterogeneity of the element within a cluster is rarely fulfilled. So it is seldom a correct representation of the parent population.

Multi-stage sampling

Under this method, the sample is prepared in stages. The population is divided into a number of large sampling units, each of

which in turn is divided into smaller units and so on. Suppose a sample of 1000 urban households from all over the state is to be selected. In such a case, first few districts say 10, are selected. In the second stage, two cities from each district is selected. Finally, 50 households are selected from each selected city. The number of stages is multistage sampling varies depending on the convenience and the availability of suitable sampling frames at different stages.

Ordinarily multi stage sampling is applied in big cities leading to a considerable large geographical area.

Area Sampling

Area sampling is a form of multi-stage sampling in which maps rather than list or registers are used in sampling frame. In simple random sampling, stratified sampling and systematic sampling a complete and accurate listing of the elements of population is required. If such satisfactory frames are not available area sampling is applied. In area sampling, the overall area to be covered in a survey is divided into smaller areas within which a random sample is selected. For example, a city map can be used for area sampling. Various blocks can be identified on the map and this can provide a suitable frame. The entire city area can be divided into blocks which are them numbered and from which a random sample is finally drawn. Area sampling is perhaps the only possibility, if a suitable sampling frame is not available.

Sequential sampling

In sequential sampling, a number of samples are randomly drawn from the population. Generally, the first sample is the largest, the second is smaller than the first, the third is smaller than the second and so on. The result of the first sample is compared and evaluated. If they do not satisfy the criteria, the second sample are computed and evaluated. If they do not satisfy the criteria, the third sample are computed. This process is continued in till the specified criteria are satisfied.

The main advantage of sequential sampling is that it obviates the need for determining a fixed sample size before commencement of the survey.

6. Non-probability sampling

In non-probability 'sampling, the selection of a population element is based on the judgement of the researcher. The following are the non-probability sampling methods.

1) Convenience sampling

2) Judgement sampling

3) Quota sampling

Convenience Sampling

The convenience sampling, as the name implies, is selected on the basis of the convenience of the researcher. The convenience may be in respect of availability of source list, successionalitily of the units etc. A convenience sampling may be used when;

i) The universe is not clearly defined

ii) the sampling unit is not clear

iii) a complete source list is not available.

In convenience sampling, it is not possible to know the representativeness of the selected sample. As such it introduces an unknown degree of bias in the estimate. So we can not make any definite result from such a sample. However, convenience samples can be justified at the exploratory stages of research, as a basis for generating hypothesis and for conclusive studies where the manager of a firm is willing to accept the risk that the study result might have been great accuracies convenience sampling is extensively used in practice.

Judgement Sampling

Judgement samples are also called purpose sample. They are selected on the basis of what some expert thinks those particular sampling units will contribute to answering the particular research at hand. The reliability of the sample depends upon the judgement of the expert. For example, in test marketing a judgement is made as to which cities would constitute the best ones for testing the market, ability of a new product.

The judgement sample may be suitable when a small sample of a few units is to be selected as the errors of judgements are likely to be less than the random errors of probability sample.

Quota Sample

Quota sampling is quite frequently used in marketing researcher. Under this method the interviewers are given quotas to be filled from the different strata, with some restrictions on how they are to be filled. For example, a survey of housholds is to be made in an area. The total number in the areas in 1,00,000. It is required that a sample of 1% i.e., 1000 are to covered. A sample of 1000 households may be chosen subject to the condition that 600 should be persons above 30 years and 400 persons under 30 years. The actual selection of specific sample units is left to the judgement of the interviewers.

The limitation of quota sampling is that the selection of sample depends on the mood and convenience of the interviewers. So the sample may not be representative. Further, ever though interviewer may be conscientious and alert it is difficult to determine such control characteristics such as age in the interviews. As a result, the interviews conducted to meet particular quota may not, in fact, have the characteristics specified by the quota.

Sample size

Determination of the sample size involves both statistical and non-statistical consideration.

1. Nature of Population

If all the units in the population are homogeneous, a small sample is enough. If they are heterogenous, a large sample would be needed, Variability in the population can be known by estimating its standard deviation. Sometimes, estimates of standard deviation are available from previous studies.

2. Degree of accuracy or precision desired

Precision is the amount of error that could be tolerated in sample estimates. In general, the larger the sample, the smaller the error or higher the degree of accuracy. The accuracy of a sample increase in proportion to increase in the square root of the number of items in the sample. To double the accuracy, we must quadruple the size of the sample.

3. Degree of confidence desired

The third consideration is the degree of confidence that the researcher wants to have in the results of the study. In case, he wants to be 100 per cent confident of the results he is left with no option but to cover the entire population. Normally, three confidence levels namely, 99 percent, 95 percent and 90 percent are used. In case, 95 percent confidence level is used, it implies 5% of the true population statistically falling outside the range indicated by the confidence level. In marketing research studies, the most frequently used norm is the 5% confidence level.

Non-statistical considerations

1) Nature of study : For intensive and longitudinal studies small samples are enough.

2) Practical consideration : Availability of finance and time at our disposal, number of trained field workers etc., are important factor in deciding the size of the sample.

3) Nature of respondents to be contacted : If respondents are geographically scattered, a small sample is suitable. If refusal rate is likely to be heavy, a large sample has to be selected.

No rigid number can be prescribed for an optimum size of sample. The nature of the problem is the only deciding factor and common sense and experience of the researcher are the only guide in this matter.

Model questions for guidance

1) Explain the various sampling errors that occur in the sampling process.

2) Account for the various sampling methods and explain them.

LESSON - 7

DATA PROCESSING

After collecting data from the field, the researcher has to process and analyse them in order to arrive at certain conclusions. It is desirable to have a well thought out frame work for the processing and analysis of data prior to their collection. Technically speaking, processing implies editing, coding, classification and tabulation of collected data so that they are amenable to analysis. The processing operations are explained below.

Editing

The first task in processing is the editing. Editing means to look for and remove any errors, incompleteness or inconsistency in the data. If the raw data are erroneous, incomplete or inconsistent, these deficiencies will be carried through all subsequent stages and greatly distort the result of the enquiry. The job of editor is to see that none of the questions has been skipped all answers have be recorded and all replies are consistent with each other.

Editing can be undertaken both at the time when the field survey is in progress and when it has been competed. In the former case it is known as field editing. The interviewer, at the time of interview uses several abbreviations in the questionnaire due to paculty of time. These need to be spelt out fully later. After the interview is over he can enter the proper response or complete the partial answers. This sort of editing is done as soon as possible after the interview, preferably on the very day or on the next day.

Another type of editing implies that all forms should get a through editing by a single editor in a small study and by a team of editors in case of large enquiry.

The first point to check is that questionnaires are complete and do not have any omissions or partial response. The second point to check is that questionnaires contain accurate answers and finally to check whether the interviewers have interpreted questions and

instructions uniformly. In dealing with these points, the editor should see that far too much time is not spent on trivial and relatively minor errors.

Coding

Coding refers to the process of assigning numerals or the symbols so that responses can be put into a limited number of categories or classes. If coding is not done it will not be possible to reduce a large number of heterogenous responses into meaningful categories with the result the data would be weak, ineffective and without proper focus.

Following are some impartant guidelines which should be borne in mind while coding questionnaire.

1) Code should be mutually exclusive : This means one code should be specific to only one kind of information so that a given response falls into only one category.

2) Set of categories should be collectively exhaustive so shall all response could be classified in one or the other category. In case of fixed alternative questions the researcher can anticipate all possible response. But in a open ended question it is difficult to anticipate all possible responses. So a miscellaneous catogory should be created for recording an anticipated response which do not fit in any other proceeded category.

3) Separate categories should be created for recording non-responses' and 'no knowledge' responses.

4) There is no definite rule for the number of categories or class that can be used. This depends on the research problem as also the extent of analysis that the researcher proposes to carry out.

Coding can be done either before the actual data collection of after it.

Example of pre-coded questions

Type of wrist watch you own :	Hand wound	1
	Automatic	2
	Quartz	3

When it is done before the actual data collection, it has certain advantages.

1) Collection of data becomes speedy because the interviewer is required to check a code value and this results in saving of time and effort.

2) Accuracy of data improves because opportunities for errors and interviewer's judgements in recording are minimized.

3) It is helpful for computer tabulation as one can straight forward key punch from the original questionnaires.

Classification

Classification is the division of whole data into different homogeneous groups on the basis of their characteristics. The basis of grouping is uniformity of attributes. By classification the complex of mass data is put into a manageable form.

The main objects of classification :

1) To simplify statistical data

2) To make the points of similarity and dissimilarity clear

3) To make a basis for tabulations

4) To make a basis for tabulations

Methods of Classification

1) Qualitative or classification according to attributes

In this method, the basis of classification is some quality of attribute. For example, classification into male and female educated and uneducated, and students in college into art, science and commerce.

2) Quantitative or classification according to variables

Classification of numerical details called quantitative classification age, income, height and weight are examples of numerical classification. For example, persons whose income are within Rs.1000 to Rs. 2000 can form one group and within Rs.2000 to Rs.3000 can form another group and so on.

Tabulation

Tabulation is the process of summarizing raw data and displaying the same in compact form for further analysis. In broader sense, tabulation is and orderly arrangement of data in columns and rows.

Tabulation is essential because of the following reasons :

1) It conserves space and reduces explanatory and descriptive statement to a minimum.

2) It facilities the summation of items and the detection of errors and omissions.

3) It provides a basis for various statistical computations.

Tabulation may be done by hand or by machine. The choice depends on the size and type of study. In relatively large enquiries, mechanical or computer tabulation may be used. Hand tabulation is usually preferred in case of small enquiries where the number of questionnaires in small and they are relatively of short length.

Hand tabulation

Under this method, the codes are written on a sheet of paper called tally sheet. For each response a stroke is marked against the code in which it falls. Usually after every four strokes against a horizontal line through the strokes is drawn. The groups of five are easy to count and data are sorted against each code conveniently.

Machine tabulation

In case of large scale surveys, where data from large respondents has been collected, machine tabulation is used; For this purpose, mechanical sorting and tabulating equipments are available. These equipments include key punches, sorting machines and tabulating machines.

Tabulation may also be classified as one way or tabulation or cross tabulation.

One way tables give answers to questions about one characteristic of questions only.

TABLE 1

One way Tabulation

Cinema seen by Sample respondents

No.of Movies seen per month	Number or Respondents	Percentage to total
0	8	16
1	12	24
2	15	80
3	10	20
4	5	10
	50	100

Cross tabulation

Cross tabulation usually results in two way tables which give information about two inter - related characteristics of data and manifold tables which provide information about several interrelated characteristics of data.

In constructing cross tabulation, one has to first determine which data should be given primary emphasis and which one should be given secondary emphasis. Data with primary emphasis are normally given in columns while those with secondary emphasis are shown in rows.

TABLE II

Cross Tabulation

Consumer preference for shopping by Income level

Income (Rs.)	Shopping Centre		Total
	Super Market	Retail Store.	Respondents
Upto Rs.2,500	30	90	120
Above Rs.2,500	60	20	80
Total	90	110	200

Principles of tabulation :

1) The table should be precise and easy to understand

2) Each table should have a clear, concise title so as to make the table intelligible without reference to the text. The title should always be placed just above the table.

3) Each table should be identified by a number to facilitate easy referance.

4) The column headings and the row headings of the table should be brief and clear.

5) The columns may be numbered to facilitate reference.

6) Those columns whose data are to be compared should be kept side by side.

7) Totals of rows should be normally placed in the extremely right column and that of columns should be placed at the bottom.

8) The arrangement of the categories in a table may be chronological, geographical, alphabetical, or according to the magnitude to facilitate comparison.

9) Any explanatory foot notes concerning the table itself are given reference number and placed directly beneath the table.

10) Source or source from which the data in the table have been obtained must be indicated just below the table.

There is no rigidity about these rules. Tables must suit the needs and requirements of the enquiry. Common sense is the chief requisite and experience is the chief teacher in collection and tabulation of data.

Model question for guidance

1) Discuss the various steps in data processing.

LESSON - 8

DATA ANALYSIS AND INTERPRETATION

After the collected data have been processed, they have to be analysed and interpreted. The analysis of data can be either statistical or non-statistical. A statistical analysis is precise and objective. There are several statistical techniques available to the researcher. The decision in the respect is necessary even before the data collection has begun so that the techniques could be used properly.

The choice of statistical tools and the actual analysis data depends on a number of factors. Three of the most basic considerations involved the selection of a statistical techniques are :

1) Number of variables to be analysed

2) Type of analysis to be done

3) Level of measurement

Number of variables

If a researcher is interested in describing a single population by the use of a single attribute he should use a univariate analysis. For example, the study may relate to the demographic characteristics, consumer preferences, consumers attitude toward a competitive product etc. In most marketing research, the researcher is interested in the relationship between two or more variable i.e., relationship between sales force and sales. Here he should use bivariate analysis multivariate analysis.

Type of measurement

Four types of measurements - nominal, ordinal, interval and ratio - are available. These measurements determine the nature of statistical tools to be used and nature of analysis to be carried out.

Type of analysis

The choice of statistical technique depends on whether the analysis involves parameter estimation or hypothesis testing.

The first part deals with univariate analysis.

Three measures of control tendency are often used in marketing research the mean, the median and the mode.

Mean

The mean is the sum of all items divided by the number of items. The mean is the appropriate measure of central tendency for eternal data. For example, the marks of four students are 20, 25, 15 and 40 respectively. Then the mean value will be

$$\frac{100}{4} = 25$$

Symbolically the formula for calculation of mean is

$$\bar{X} = \frac{\Sigma x_1}{n}$$

The weighted value mean is most frequently used in marketing analysis.

Median

Median is the measure of central tendency when all the items in a series are arranged either in ascending or descending order of magnitude. If the data form ordinal or interval scale, median can be made use to measure central tendency.

Mode

Mode is the value of the variable which occurs most frequently in a distribution. For example in a series of 3, 5, 6, 10, 11, 6, 15, 6, 19, 20, 6 the variable 6 has occurred more frequently 4 times. Hence 6 is the mode of the series. The mode is a measure of central tendency appropriate for nominal or higher-order scales. It is the least frequently used measure. It is not usually amenable to computer manipulation

Dispersion

Dispersion refers to the amount or the magnitude of spread. Measures of dispersion included range, interquartile, range, average deviation and standard deviation.

Range

Range is the crudest measure of spread. The range is often the most useful. It is the simply the difference between the highest values and the lowest value.

Interquartile range is the range of the middle 50 percent. To computer it, substract the value at the end of the third quarter (75 percent) from the value at the end of the first quarter (25 percent). This measure is used to avoid the problem of range which gets influenced by unusually high a low values.

Mean Absolute Deviation (M.D)

It refers to the average (arithmetic mean) of deviation of various items in the group from the mean (ignoring the sign of deviation.

Standard Deviation (S.D is just like the average deviation except that instead of taking the absolute value of the number to eliminate the negative signs, he standard deviation takes the square of the deviations of individual values from the arithmetic means. Despite the increased difficulty of computation caused by the squaring

process, the standard deviation is the generally preferred measure of dispersion.

Percentages

It refers to a special kind of ratio. Percentages are used in making comparison between two a more series of data. For example, if a researcher studied 1000 households and found that 430 were having T.V. sets. This figure is meaningless unless it is related with the base 100.

Percentages can be used to compare the relative terms, the distribution of two a more series of data.

Over use of percentage is bad when the number of absolute entries is very small.

Selecting the appropriate statistical test

There are a number of such tests available and the researcher is often faced with a problem of selecting the mot appropriate ones from those available. The following guidance would help a researcher in selecting the appropriate tests.

1) Purpose of using a test

The intention must be clearly spelt out, whether the purpose is to determine that there exile significant differences between groups between two or more variables.

2) Measurement scales

The type of scales used namely nominal, ordinal, interval or ratio scales, determine the tests to be used in analyzing the collected data.

3) Number of samples involved

There may be comparison made between the sample and the population. A comparison may be made between units within the sample. A comparison may be made between two a more sample. The statistical test is decided by the type of study involved.

4) inter-relationship of samples

When two or more than two samples are involved, it is essential to see whether these sample are independent or are they related?

5) Number of Variables are involved

When many numbers of variables are involved, it is a test for association. When only two variables are involved, the techniques are called divariate. If more than two variable are involved in the tests, less multivariate techniques are used.

These five points provide a key to the researcher in selecting the appropriate statistical test.

Developing hypothesis

In making statistical decisions we make certain assumptions or guasses about the population involved in our marketing research problem. These assumptions are known as statistical hypotheses. Whether these assumptions are true of false is tested during the research.

In developing hypotheses the researcher's first task is to set up two statements. The first one of these two statements is called null hypothesis (H_o). The null hypothesis Ho is a statement of no true difference in the sample and population in particular study. The null hypothesis must be developed in such a manner that its rejection leads to the acceptance of other statements called alternative hypothesis (Ha). The two hypothesis are constructed in such a manner, that if one is true, the other happens to be false and vice versa.

Type I and Type II errors

While accepting or rejecting the null hypothesis an error may occur. This errors could occur owing to the fact that it is impossible to be sure that the decision of acceptance or rejection of hypothesis was a right decision.

A Type I error is committed if we reject a hypothesis which is true and should be accepted. A Type II error is committed if we accept a hypothesis which is false and should be rejected. It means in each case a wrong decision or judgement has taken place.

The next step in testing the hypothesis is to determine a suitable test statistic and its distribution. It is necessary to specify, before the sample is taken which value of statistic will lead to a rejection of nul hypothesis and which will lead to acceptance of null hypothesis. By making calculations on a random sample, the sample results fall in the acceptance region. In the two tailed, test, half of significance level falls on the right and other half on the left side of the distribution curve.

Statistical tests for measuring group differences (t and z tests)

These tests are 1) used do measure difference between groups, 2) used to determine whether groups or variables are associates, These tests help us in recognizing the impact of sampling errors on the obtained outcomes.

t and z tests can e applied or used if measurement scales used are at least interval, observations are drawn from normally distributed population, observations are independent and two or less groups are involved.

The researcher should use z test under conditions "when he has got data on the population mean and standard deviation. This population can be actual or assumed one in which parameter value is selected.

't' test is used in marking research when the population's standard deviation is not available 2) the sample size involved is less than 30, (3) only sample data is available on both groups.

How to apply 't' test in marketing research

Assume a study conducted by a bank in Ludhiana. The study aims to determine how incomes of the bank customers compare with those of city residents of Ludhiana.

This study disclosed that the average household income was Rs. 10,000 with a standard deviation of Rs. 1000. The bank took a sample of 1,000 of its customers and found that their households average income Rs. 15,000 with a standard deviation of Rs. 2,000 Distribution of Ladhiana and Bank Customer Household

Ludhiana	City Household	Bank Customer Households
1)	Number surveyed Total Population	1,000
2)	Mean Income Rs. 10,000	Rs. 15,000
3)	Standard Deviation Rs. 1,000	Rs. 2,000

Null Hypothesis

Ho = the mean should be income of the Bank customer is equal to the mean income of the average Ludhian city household ($\bar{X} = \mu^1$).

Alternative Hypothesis

Ha = the mean household income of the bank customer is not equal to mean income of the average Ludhiana city household ($\bar{X}_2 \neq \mu$). The level of significance used was 0.05 or 5%. For z test the following formula is used.

$$2 = \frac{\mu^1 - \bar{X}_2}{\alpha X_2}$$ where $^{\alpha}\bar{X}_1$ is the standard error and it can

be calculated as follows.

$$^{\mu}\bar{X}_1 = \frac{\infty}{\sqrt{.n}}$$

$$= \frac{1000}{\sqrt{1000}}$$

$$= \frac{1000}{31.622}$$

= 31.623

substituting the value in the formula

$$Z = \frac{10,000 - 15,000}{31.623}$$

$$= \frac{-5000}{31.623}$$

= -158.12

This Z value must be compared with the tabular value of 'Z' corresponding to 5% level of confidence, which for the present example is 1.96. The tabular value of Z at 5% level of significance is smaller than the computed value. So the null hypothesis is rejected. Hence the alternative hypothesis that there exists a large difference between Ludhiana city households and bank customer difference

between Ludhiana city households and bank customer households. The mean income of bank customers is greater than the city households.

Z Test concerning attributes

While applying Z test to attributes, the presence or absence of a certain characteristic is decided. Assume that the bank takes a sample of 100 of its customers and finds that 70 per cent of its customers are having at least high school level qualifications. 45% of the Ludhiana city residents are having school level education is the proportion of educated bank customers is comparable to proportion of educated general Ludhiana city residence. 5% level of significance is assumed.

Null hypothesis Ho : $P_B — P_L$

Alternative hypothesis Ha : P_B ¹ P_L where

P_B = proportion of bank customers.

P_L = proportion of Ludhiana city residents

$$Z = \sqrt{\frac{P - P}{{}_{\alpha}P}}$$

$$P = \sqrt{\frac{P.Q}{n}}$$ Where P is population proportion

$Z = 70\% - 45\%$

$$= \frac{35\%}{\sqrt{1000}} = \frac{2.475}{\sqrt{1000}} 2.475$$

$$Z = \frac{25}{1.573} = 15.893$$

Since the computed value of Z greatly exceeds the tabular value the null hypothesis is rejected. The alternative hypothesis is accepted.

t test application to Marketing Research

't' test in marketing research is frequently used when the samples are small.

1) To test the significance of population mean

When the sample used is less than 30 and standard deviation of the sample is known we can use the following formula.

$$t = \frac{\bar{X} - \mu \sqrt{n} \times}{S} \text{ where}$$

$\bar{X}$ = is sample mean

μ = population mean

S = standard deviation

n = sample size

Tabular value of t is compared with the computed value of 't'. If the computed value of 't' exceeds the tabular value, null hypothesis is rejected.

2. To test the significance of the difference between two sample means

When 't' test is applied to test the significance between two sample means, the following formula is used.

$$t = \frac{\bar{X}_2 - \bar{X}_2}{S} \quad \frac{\sqrt{n_1 - n_2}}{n_1 + n_2} \text{ where}$$

X_1 = mean of the first sample

X_2 = mean of the second sample

S = combined estimate of standard deviation

n_1 = size of the first sample

n_2 = size of the second sample

This tests is based on $n_1 + n_2 - 2$ degree of freedom,

3) t tests to measure significance of the difference between proportions. When the tests of attributes is involved following formula can be used

$$t = \frac{P_1 - P_2}{\sqrt{\frac{P_1 - Q_1}{n_1} + \frac{P_2 - Q_2}{n_2}}}$$

where P_1 = proportion of sample.

P_2 = proportion of sample 2 having a given characteristic

Chi-square Analysis

It is a non-parametric test used most frequently by marketing researcher to test hypothesis. This test is employed for testing hypothesis when distribution of population is not known and when nominal data is to be analysed X^2 square test can be used if the experimental data or sample observations are independent of each other. The data collected must be drawn from the population at random. The data must be presented in original units. There must be atleast 50 observations in the sample.

The following formula is used for calculating the value of Chi-square.

$$X^2 = \frac{\Sigma (F_0 - F_e)^2}{F_n} \text{ where}$$

F_0 = observed frequency

F_e = expected frequency

The computed value is compared to the tabular value of X^2. The degree of freedom (d.f) are calculated by using the formula.

d.f = (c - 1) (n - 1) where

c = number of cell frequencies in rows

The expected frequency values used in chi-square test may be arbitrarity assigned or determined mathematically from existing information.

Application of X^2 test

Suppose a toilet soap manufacturing company wants to test package design of a newly introduced of toilet soap. The company selects four designs for its package of soaps and wants to test which one of the four is the best. The company conducts a survey among 1000 consumers to pick up their best design after observing all the four designs. If all the four designs have equal appeal each one of these designs has approximately 25% chances of being selected as favorite by the consumers. The observed frequencies are the following :

Package design	Number of times selected a favourite
1	300
2	200
3	100
4	400
	1000

Null hypothesis : Ho All the four package designs have equal appeal to customers.

Alternative hypothesis H_a = All the four package designs do not have equal appeal

Chi-square analysis of package designs

Package design	F0 Observed Frequencies	Fe Expected Frequencies	(F0-Fe)	$(F0-Fe)^2$	$\frac{(F0-Fe)^2}{Fe}$
1	300	250	50	2500	10
2	200	250	-50	2500	10
3	100	250	-150	22500	90
4	400	250	150	22500	90
$\Sigma F0 = 1000$	$\Sigma Fe = 1000$	$\Sigma F0 - Fe = 0$	$\Sigma(F_0 - Fe)^2 =$ 50000		$\frac{(50,000}{Fe\ 250} = 200$

To find the tabular values of x^2 we have to find out the degree of freedom and level of significance. The degree of freedom in this case are.

d.f. = (C - 1) (r - 1)

= Number of groups - 1 - k where - k is the number of parameters estimated.

d.f. = k - 1 - 0 = 3

Now the tabular value at 3 degree of freedom and 5% level of significance is 7.8.

The computed value exceeds the tabular value hence the null hypothesis is rejected ie., All the four package design do not have equal appeal to customers.

In the above mentioned example, the expected frequencies are assigned arbitrarity. These frequencies can be computed mathematically also.

Mc Nemer test

It is a modified chi-square test. This test can be used with nominal and ordinal data. This test is used when the samples are not independent. It is commonly used for pre-testing and in Advertising research. It is applicable to situations where 2 x 2 frequency table is involved. (e.g.) A detergent manufacturing company wanted to test its advertising effectiveness. It distributed free samples of its detergents to a sample of customers. After some time, the compare works to these customers individually to make a purchase of detergent the company found the following results.

Customers Buying Detergents after writing

		Brought	Did not buy
	Brought	(w) 55	(x) 25
Before Writing	Did not buy	5 (y)	65 (z)

Null hypothesis Ho : Letter writing campaign did not significantly change the buying behaviour

Alternative hypothesis Ho : Letter writing campaign significantly changed the buying behaviour

Mc. Nemar test can bc applied as follows

$$x^2 = \frac{|(y - x) - 1|^2}{y + x}$$

$$= \frac{[(5.25) - 1)^2}{20}$$

$$= \frac{441}{30} = 14.7$$

The calculated value of x^2 is 14.7 and the tabular value of x^2 at (r - 1) (c -1) = 1 degree of freedom and 5% level of significance = 3,84. The tabular value exceeds the computed value and the null hypothesis is rejected. The null campaign was effective in changing consumer's behaviour.

Analysis of Variance

This test is used in such problems where the significance or the differences between more than two sample means are tested.

The analysis of variance is used when each sample is drawn in a random manner front normal population. The sample also reflects the characteristics of the population. The population from which the samples are taken have identical means and variances.

These are two methods of using analysis of variance namely one way classification and two way classification.

One Way classification : Data are classified according to one factor. The null hypothesis takes the form Ho. $= \mu^1 = \mu^2 - \mu^3 = \mu^4$ is the arithmetic means of the population from which the K samples are randomly drawn are equal to one another.

F ratio can be calculated as follows:

$$F = \frac{\text{Variance between the samples}}{\text{Variance within the samples}}$$

To compute the variance between the samples. 1) calculate the mean of each sample 2) calculate the grand average mean 3) take the difference between means of the various samples and the grand average 4) square these deviations and obtain the total which will give sum of squares between the samples. 5) devide the total obtained in previous step by degree of freedom. The degree of freedom will be one less than number of samples.

To calculate the variance within the sample. 1) calculate the mean of each sample. 2) take the deviations of the various items in a sample from the mean value of the respective samples 3) square these deviations and obtain the total which gives the suit of squares within the samples 4) divide the total obtained in previous step by

the degrees of freedom. The degrees of freedom are obtained by deducing from the total number of items the number of samples to d f= n - k where k is the number of samples and n is the total number of all the observation.

Calculate the F value and compare it with the tabular value. If the calculate value of F exceeds the tabular value, then the difference in sample means is significant. If the calculated value of is less than the table values the differences is not significant.

Two Way Classification

Here an attempt is made to study the effect of two factors in the same experiment. For each factor there will be a number of classes or levels. The procedure for analysis is somewhat, different than the one followed while dealing with problems of on any classification.

Measurement of association

Statistical toc's which are used to determine whether any association exists among groups of data are correlation and regression analysis. They are used to determine whether some association exists, among the group of data and the intensity of this association or relationship.

Correlation analysis

It is a statistical tool with the help of which we determine the intensity of relationship between two or more than two variables. Two variables are said to be correlated in the movements in one or accompanied by movements in the other. It summarizes the direction and degree of correlation just in one figure.

Correlation analysis enables a marketing manager to estimate costs, sales, prices and other variables on the basis of some other series with which these, costs, sales, prices may be favourably related.

Correlation may be positive and negative. It may be simple multiple and partial. It may be linear and non-linear.

In marketing research Karl Pearsan's co-efficient are widely used.

Karl Pearsan's Co-efficient of Correlation

It is illustrated with an example;

A company wants to determine whether in the past the sales turnover and advertising expenditure are closely referred. The following data is furnished to find out the extent of correlation between the two.

Year	75	76	77	78	78	80	81
Sales turnover (x) (Rs. in lakhs)	75	77	80	85	92	95	98
Advertising expenditure (y) (Rs in lakhs)	0.80	0.81	0.83	0.85	0.90	0.95	0.96

Karl Pearsan's coefficient of correlation $r = \dfrac{\Sigma xy}{\Sigma x^2 \times \Sigma xy^2}$

where x = difference between x and mean of x ($\bar{X}$)

y = difference between y and mean of y ($\bar{y}$)

Computation of correlation coefficient

Year	Sales turnover $\bar{X}$	x - $\bar{X}$	Advertising experiences (x)	y - $\bar{y}$	x^2 (Y)	y^2	xy
1975	75	- 11	80	- 62	81	.0010	.17
1976	77	- 9	.81	-06	81	.0036	.54
1977	80	-8	.83	-.04	36	.0016	.24
1978	85	-1	.86	-.02	1	.0004	.02
1979	92	6	.50	0.05	36	.0065	.18
1980	95	9	.95	0.08	81	.0064	.72
1981	98	12	95	.08	144	.0064	.72
Σx 602	Σx 0.	Σy, 6.09	Σy = 0	Σx² - 500	Σy² = 0242	Σxy = 3.19	

$$\bar{X} = \frac{\Sigma x}{n} \quad \frac{602}{7} = 86, \quad \bar{y} \frac{\Sigma y}{n} = \frac{6.09}{7} = .87$$

$$r = \frac{\Sigma xy}{\sqrt{\Sigma x^3 \, \Sigma y^2}}$$

$$= \frac{3.19}{\sqrt{500 \times .0242}}$$

$$= \frac{3.19}{\sqrt{121}} = \frac{3.19}{3\,.\,4785} = 0.917$$

The relationship between sales and advertising effectiveness has been positive. These two variables are correlated positively. With the increase in advertising expenditure, the sales will go up.

Rank Correlation Coefficient

In this method, the individuals in the group will be arranged in order. This order of an individual enables the researcher to provide ranks to each individual involved. The rank correlation coefficient is determined for those ranked items or individuals.

$$R = 1 - \frac{6\,\Sigma D^2}{N(N^2 - 1)} \text{ or } 1 - \frac{6\,\Sigma D^2}{N^2 - N} \text{ where}$$

D = difference of ranks between paired items in two series.

The value of R generally lies between + 1 and - 1. If it is + 1 here is complete agreement in the order of ranks and ranks are in the same direction. If they are in opposite direction then there is complete agreement in arrangement of the ranks.

Example

A company wanted to test its new product. It tested the product in two tests given to 10 consumer. The consumers were asked to give marks to the product out of one hundred. Following data regarding the product were obtained.

Consumers	1	2	3	4	5	6	7	8	9	10
First test	90	95	80	75	65	84	70	89	93	99
Second test	92	9	85	73	69	90	79	92	91	98

Computation of Rank Correlation Coefficient

Consumers	First test	R_2	Second	$R_2(R_1-R_2)^2$	D^2
1	90	7	92	8	1
2	95	9	93	9	0
3	80	4	85	4	0
4	75	3	73	2	1
5	65	1	69	1	0
6	84	5	90	5	0
7	70	2	79	3	1
8	89	6	92	7	1
9	83	8	91	6	4
10	99	10	98	10	0
N = 10				D^2 =	8

$$R = 1 \quad = \frac{6\ \Sigma D^2}{N^2 - N}$$

$$= y = \frac{6 \times 8}{1000 - 10} = \frac{7 - 13}{990}$$

$$= \frac{990 - 48}{990} = \frac{942}{990} = -.95$$

The positive value of R indicates a high degree of positive correlation between first and second tests. Thus the attitude of the people towards the product are correlated.

Regression Analysis

It is a statistical tool which enables a researcher to estimate or predict the values of unknown variables from the known values of another variable. The regression analysis can be used to find the values of the dependent variables from those of independent variables. The degree of association or correlation that exists between two variables can be determined. Regression analysis inability as to find out the cause and effect relationship whereas the correlation analysis is confined to the measurement of degree of relationship between variables, it falls to indicate cause and of fact relationship between variables. Regression equation of Y on y is $yc = a + bx$ and that of X on Y is $Xc = a + by$ where a and b are constants determining position of line completely.

(e.g) In a study a tractor manufacturer found that the demand for tractors depends to a greater extend on the per capita income of the farmers in a particular state of this country. Following are the data an tractor sales of the company and per capital income of farmers in seven states of India for the year 1989.

State	Per capital Income assumed (Rs. 000)x	Sale of tractors (figures in .000)y
Punjab	12	10
Haryana	10	8.2
U.P.	8	7.5
M.P.	85	9.1
Bihar	75	7.3
Rajasthan	6.5	6.5
Karnataka	7	6.5

use least square method to fit equation of y on x and predict tractor sales for the year 1990. For West Bengal, which is assumed to have Rs. 620 per capita income of farmers, assuming that the same relationship holds true.

Calculating Regression Equation

SI.	State	Percapita income of Farmers	Sales of tractors	x^2	XY
1.	Punjab	12	10	144	120
2.	Haryana	20	8.2	100	82
3.	U.P.	8	7.5	66	60
4.	M.P.	8.5	8.1	72.25	68.85
5.	Bihar	7.8	7.3	56.32	54.75
6.	Rajasthan	7.0	6.9	49	48.50
$\Sigma x = 59.5$ $\Sigma y = 54.5$ Σx^2 527 75 $\Sigma xy = 476.15$					

Regression equation of y on x is

$y_2 = a + bx$

Solve the equations

$y = Na + b\Sigma x$

$\Sigma xy = a\Sigma x + b\Sigma x^2$

$54.5 = 7a + 59.56 \quad 476.15 = 59.5a + 527.75b$

$b = 0.59 \quad a = 2.77$

So the Regression equation of y on x is

$y = 2.77 + 0.59X$

Estimated sales for the year 1990 In West Bengal is

$y = 2.77 + 0.59(6.20) = 2.77 + 3.658 = 6.428 = 643$ tractors

Multiple regression is omitted here due to the complexity involved.

Multivariate Analysis

It is a branch of statistical analysis which is concerned with relationships of sets of dependent variables, whereas bivariate analysis involves only two variables at a time. Multivariate analysis makes use of complex techniques such as multiple correlation, multiple regression, discriminant analysis, canonical, analysis, and factor analysis.

Illustrations are not taken up for these techniques, because of complexity of the subject.

Model question for guidance

1) Explain the 't' test and 'Ch_1' square tests.

LESSON - 9

REPORTING RESEARCH FINDINGS

Report writing is an art. It involve the process of communicating the results in a systematic manner. Presentation of the research occupies the final step in the research process. A research report is defined as the presentation of the research findings directed to a specific audience to accomplish a specific purpose. The presentation can be in written or oral form but the scope of the papers is limited to written presentation.

Guidelines for written report

A series of guidelines which should be followed are described in the subsequent pages.

Consider the audience

The research report is obviously meant for the use of decision makers. As such it must be tailored to their needs. The decisign makers are usually interested in a clear, concise, accurate and interesting report which highlights their information needs with a minimum of technical jargons.

Adhere to objectives

There researcher while preparing the report must keep the study objective in mind. Mere reporting of the findings without reference to the objectives will produce a sterile piece of writing.

Be Concise but complete

The researcher need not put what all he knows on the given subject. He can cover the important points of the project and exclude the unimportant. The researcher should exercise his discretion to decide what is to be included and how much emphasis is be given to each area. The information needs of the decision maker are central to determine the importance of each area.

Be objective yet effective

The research report must be an objective presentation of the research findings. If the findings are presented in a distorted or slanted manner, the researcher violates the standard of objectivity. The findings can be presented in a manner which is objective yet effective. Effectiveness does not mean "selling the ideas" by means of deception.

The vocabulary must be appropriate for the audience and cliches and slangs should be avoided. The sentences should be should and to the point.

Purposeful arrangement

The report must give an overall picture. Hence each paragraph should find its place in a logical way. An outline would help the researcher to make, good, arrangement and avoid duplication of any point.

Report format

The following outline is generally accepted as the basis format of the report writing

1. Title page

2. Table of contents

3. Management summary

    Objectives
    Results
    Conclusions
    Recommendations

4. Body of report

Introduction
Methodology
Results
Limitation

5. Conclusions and recommendations

6. Appendix

Tables not included in findings
Sampling plan
Bibliography

Title page

The title page should contain a titles, the data, the name of the organization submitting the report and the organization for whom the report is prepared. If the report is confidential, the name of those individuals who will receive the report should be specified on the title page.

Table of contents

It lists the sequence of topics covered in the report along with page references. Its purpose is to help readers in finding a particular section in the report. If the report contains a lot of tables they are listed as the end of the table of contents by page number.

Management summary

It provides the decision maker with the key research findings which bear on the decision problem. A good management summary is written specifically for the decision maker and is designed to be action oriented.

The management summary states the objectives of the research project and nature of the problem. Then the key results are presented along with the conclusions which are based on the research. It ends with specific recommendations for action.

Body of report

The details of the research project are found in the body of the report. It includes (1) introduction (2) methodology (3) results and (4) limitation.

Introduction : The purpose of the introduction is to provide the reader with background information needed to understand the rest of the report. It should explain the nature of the problem and the research objectives. Background information relating to product and services involved and the circumstances surrounding the decision problem should be provided. Review of previous research on the problem, if any, can be done.

Methodology : The purpose of this section is to describe the nature of the research design, the sampling plan, data collection and analysis procedure. Adequate detail must be conveyed so that the methodology used, can be appreciated. At the same instance, the presentation should not overpower the reader. Jargons should be avoided to the extent possible.

This section should inform the reader whether the design was exploratory or conclusive. The researcher must explain why the particular design is used and its merits and demerits.

The source of data-secondary or primary or both-should be explained. The nature of data collection method-observation parivey must be specified A copy of a questionnaire or form for recording observational data may be included here or in the appendix.

The nature of the universe studied, the size of the sample, geographical limits of the sample and the nature of the sampling procedure must be clearly indicated in this section.

The number and type of field workers used should be indicated. It will be useful if their selection, training and supervision procedures are explained in detail.

If any specific statistical techniques have been used, they may be mentioned.

Results : section contains an organized narratives of the results. The specific objectives of the study should be kept in mind and findings presented with them in view. The reporting of findings must have a definite point of view and fit together into a logical whole.

Limitations : The purpose of this section is to enable the reader to judge the validity of the study results. The limitations generally involve sampling and non-response inadequacies and methodological weaknesses. The writing of the conclusions is affected by the acknowledged study limitations. It is the researcher's professional responsibility to clearly inform the readers of the limitations.

Conclusions and recommendations : The conclusion must flow logically from the presentation of the results. The conclusions should clearly limit the research findings with the information needs. Sometimes the researchers are not expected to make recommendations in view of their limited knowledge of the company and its operating policies.

Appendix

The purpose of the appendix is to find a place for material which is not essential to the body of the report. The material is typically more specialized and complex than material presented in the main report. The appendix will frequently contain copies of the data collection forms, details of the sampling plan, estimates of statistical error, interviewer instructions and detailed statistical tables associated with the data analysis process.

Research data presentation

It can be presented in tabular or graphic form. The type of graphic forms are (1) the pie chart (2) the bar chart and (3) the line chart. Tables should contain the following elements.

1) Table number

2) Title

3) Box head and stub head and

4) Foot Notes

Pie Chart

The pie chart is a circle divided into sentences such that the size of each that the size of the section corresponds to a portion of the total. It depicts the relative differences in number of people visited a retail show room.

Bar chart :

A bar chart depicts the magnitudes of the data by the length of various bars which have been laid out with references to the horizontal or vertical scale. It is easy to construct and be readily interpreted. Fig. 1 presents a bar chart depicting the number of people visited a textile show room an week days and week ends.

BAR CHART

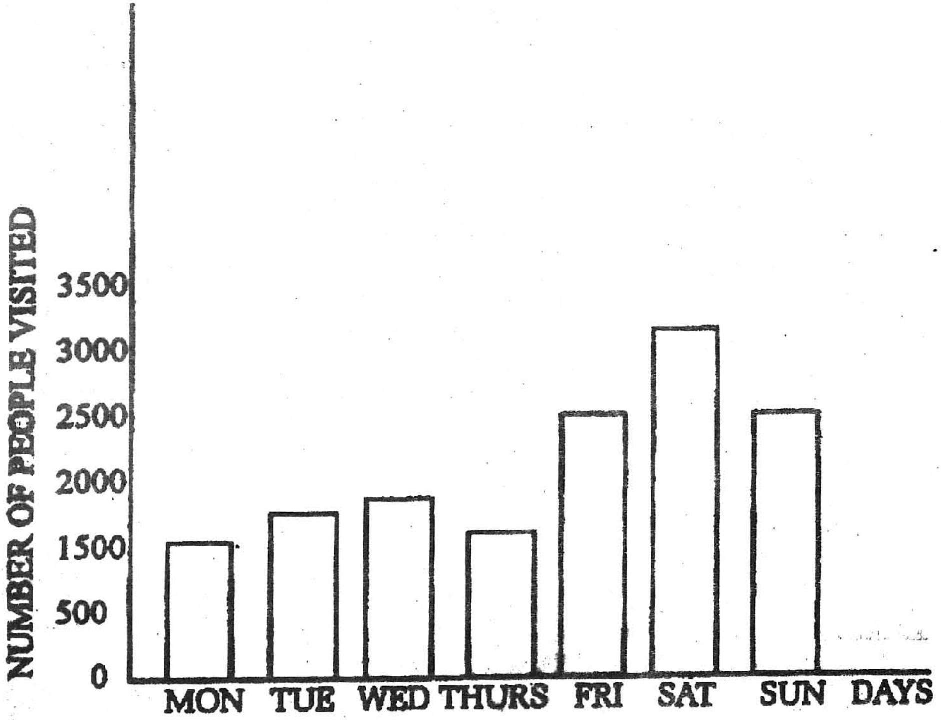

Fig - 1.

Line chart

The data presented in bar chart can be presented in the form a line chart also.

Model question for guidance

1) Explain the guidelines for writing a research report

LESSON - 10

PRODUCT RESEARCH

Thousands of new products are introduced to the market every year. A majority of the products which are not found ten year ago in the shelves of retail stores capture the attention of consumers. Big Industrial houses set aside a huge sum on R & D budget annually to develop new products.

But introduction of new products is increasingly difficult and a small portion of new products is successful

The essence of a firms new product policy is the identification of the product opportunities which will generate over a stated time period the greatest return on the funds invested in relation to the risk involved and which are compatible with the firm's resources. It is necessary to take the following steps.

1) Develop product specifications with regard to optimum product attributes.

2) Test the product

3) Test market the product

4) Commercialize and supervise the product through its life cycle.

Hence marketing research should provide information pertaining to what features must be included in the product and the level and relative importance of each. Thus, the researcher's goal is to describe the profile of the 'ideal' brand.

Important attributes : The researcher must find out what consumers want and then translate these desires into meaningful technical language. Consumers typically describe what they want in terms of products, benefits, functions and effects. These must be translated into product attributes, design characteristics, performance criterion and manufacturing procedure.

There are three methods of determining the importance of various product attributes.

The first methods is self reporting, in which respondents define which product attributes are influencing their preferences or purchases. This method is very popular because of its relative simplicity and case in use.

The second method comprises of consumers evaluate products as bundles of attributes and provided information about the relative importance of each attribute. A non-disguised questioning approach is used for this purpose.

The third method is an inferential technique. In this method an information display board provides information which consumers might wish to obtain before purchasing a product. Information are conveyed to respondents, till they have enough to make a decision. This influential technique is based on direct observation of the respondents choice behaviour. It is an inexpensive, easy to use method. It has been empirically proved that this method produces valid results.

Relative importance of individual attributes

Relative importance of products attributes both individually and in combinations are critical to the design of the product, the need to position it properly in the market place and to estimate demand.

These are the four methods available to measure the importance of product attributes.

Concept testing

It is a way of determining whether potential customers under stood the product idea behind the concept and how they evaluated the product or brand's attributes in the light of the benefits claimed.

Preference distribution analysis

The objective of this test is to obtain consumer preference measures for each salient product characteristic as well as for the overall product. Usually paired comparison tests, rank orders, rating scales or statements concerned with likes and dislikes are utilized for this purpose. The stimulus may be pictures, drawings, cards and products samples describing the products concept Paired comparison tests are typically used when the number of objects involved is small, They are simple to administer and easily understood by the respondents.

Similarity measures

It involves obtaining the judgements of consumers on the substitutability among various brands. The simple way is to enquire the consumer to specify the degree substitutability between pairs of brands using a rating scale. A part from it, an overall preference rating is obtained for the company's existing or proposed product. This approach is beneficial when several product variations are being tested simultaneously.

Product testing

The objectives of this phase is to test the product under "live use" conditions. Management will test the product intensively in the laboratory whenever it is possible to stimulate real world usage conditions. For some industrial goods it is feasible to have customer's try the product under a set of specified conditions.

Paired comparison tests

These tests typically involve two variations of the same product, variations which often differ in many ways. The target group is asked to use both products and then to choose the one they like most. It is difficult to implement in practice. A better approach is to have respondent try both variations for a period of time. The interviewer then returns to get a preference rating and to find out what attributes were liked or disliked in each product.

It is important to differentiate product concept and a product idea. A product idea is a possible product described in objective functional terms that the company can see for itself offering to the market".

"A product concept is a particular consumer meaning, that the company tries to build into the product idea".

Concept testing is a flexible research instrument. It involves the use of several means to express the concept with the aid of pictures, drawings, cards, products models, samples or prototypes. They are intended as stimulate to provide the consumers with a more complete understanding of what is being tested.

Concept testing can not be used for determing future sales.

Conjoint Analysis

It has been used to determine what combination of attributes is most wanted by various group of customers for a new products or service.

In such studies, are told about the various combinations of new respondents features under consideration and are asked to indicate the combination which they most prefer, to indicate the combination which is their second preference and to indicate the combination which is their third preference and so on.

Conjoint analysis uses such preference data to identify that respondents consider to be the products' or service's most important features and most important combinations of factures.

A conjoint analysis applies a complex form of analysis of variance to the preference data obtained from each respondent. It calculates a value for each feature. Features with the highest values are judged to be the must important to respondents.

Staggered comparison tests

In these rests the respondents use one product first and then after a brief period of time try the second product. The identifies to both variations are hidden. In practise, there is little difference in the results obtained by the two tests.

Disguised comparison method

This method actually duplicates the actual market conditions in the test situation. Respondents are given a pair of products which are packaged in similar fashion as free samples. A future interview is conducted without giving prior intimation about their experiences with the products.

This disguised method points up the possibility that product differences which may seem very important to management, may not have been noticed by the respondents. It would help them, once they advertised the product.

Test marketing

It has a two fold purpose. It is aimed to provide a reasonable estimate of the sales and profit potentials of the product. It helps management to identify and correct any problem relating to the product of marketing plans before launching a full fledged introduction. It helps the company to test the commercial viability of the marketing plan, product a package.

Pre-test marketing research

Any test market research design should attempt to measure the awareness, trial and repeat buying rates associated with the new product being test marketed.

Laboratory test markets

The procedure typically consists of a stimulated supermarket where respondents buy products under controlled conditions

and of auditorium like facilities. Respondents are exposed to advertisements and other promotional materials. The respondents are engaged in discussion relating to the reasons for their purchase. Sometimes later, they are interviewed over phone to decide whether they are satisfied or dissatisfied with the product date of repurchase and their comparisons with previous brands.

Full scale test marketing

This type of research mainly depends of how sure management is of its proposed national marketing plan. While selecting test markets the following aspects must be remembered.

1. The markets must be typical regarding the competitive advertising situation.
2. The markets should present different geographical regions so that results can be projected.
3. Markets should have a media pattern similar to the proposed national media plan.
4. The markets should not be too small or too big.
5. The markets should be relatively self-contained.

Many kinds of marketing information can be obtained from test markets namely.

1. Sales in units
2. Market share
3. Characteristics of consumers who buy the product.
4. Frequency of purchase of different group of consumers.
5. Ways in which products used.
6. Characteristics of consumers who sample the product but who do not buy it again.

7. Effectiveness of various coupons and introductory offers.

8. Effectiveness of the overall programme in obtaining support from the trade.

Repeat purchasing

During the introductory period, the advertising and the introductory price offer may influence people to try the product. The important question is whether a substantial position of the people try to become loyal customers. The critical measure in concerned with repeat buying. Blattberg and Golanty provide an illustration of such efforts with their TRACKER model. The process consists of three waves of 500-1000 questionnaires, one every four weeks. Data pertaining to brands purchased, media, price, special distribution problems and other required data are collected. From these data the model estimates awareness, trial and repeat buying and also projects year and sales. The results obtained by Tarcker, when compared to actual results are impressive.

It is important to find out why some consumers only try the new product and do not by it again. The information may help to determine what can be done to convert the consumers into regular users.

Thus test marketing is a method of testing a company's marketing plan for a new product before going national. It helps to high light the extent of consumers' response to certain marketing inputs.

Model question for guidance

1) Explain the various stages in product research

LESSON -11

ADVERTISING RESEARCH

Advertising is one of the important decision areas for business people. Big business houses spend huge sums on advertising. Over the years the field of advertising has received considerable attention from research workers.

Advertising research is of three types

Setting advertising objectives

The marketing researcher is concerned with setting of the advertising objectives. It will be interesting to study the effect of advertising in terms of sales and profit. But advertising is only one of the factors affecting sales and profit. Hence it is difficult to measure the effect of advertising.

Deciding the message

In this type, the advertiser desires to decide what the message should be. There are various aspects which need consideration. (1) What should be message? (2) How should it be presented? (3) What copy should they use? (4) What headlines? (5) What pictures? (6) What situations? All these questions can be well answered through marketing research.

Choosing an appropriate vehicle

In this type of advertising the advertiser chooses are appropriate vehicle. Such vehicles include newspaper, radio, magazines, television etc. Once the vehicle is chosen, they have to decide upon the questions like what programme? What day of the week? What time of the day? The alternatives available to advertisers make careful study necessary.

Setting advertising objectives

It is closely related to consumer behaviour. Consumer behaviour is known to be complex. The goal of advertising can be stated in terms of changing consumer attitudes with respect to selected product characteristics. It assumes that attitudes are predictors of behaviour and the effect of advertising on those attitudes should be studied. A marketing researcher should measure the attitudes towards his product characteristics and towards competing brands. He should get an indication of what specific attitude changes should be introduced to boost sales. Thus, the goal of advertising can be served in terms of changing attitude bearing on selected characteristics. The average consumer has a reasonably stable set of attitudes towards product characteristics. In order to set advertising objective the following points should be taken into consideration.

a) a study of market segments.

b) Importance of other market segments

c) Product characteristics

d) Optimum product a competitive price and

e) Ideal channel strategy.

In addition information is needed about the behaviour which surrounds the selection, purchase and use of product.

Deciding a message

Copy testing

Copy testing research is a research to evaluate alternative ways for the advertiser to present his message. It is an important are because the possibility of mis-comprehension is very high at this stage. Substantial mis-comprehension occurs across all age income and education group. "Copy" refers to an entire advertisement, including the verbal message, pictures, colour and dramatization

whether it appears in print, or radio or television or some other medium. Copy testings is divided into two major divisions.

1. Those tests which are made before the copy is released.

2. These tests which are applied after the copy is run.

The basic distinction between before and after tests is the purpose of the test. If the aim is to make improvements in the advertising copy prior to the full run releases of the advertising, then the test is classified as 'before' test.

Measures dealing with recognition, recall, comprehensions, believability, persuasion and attitude change are the most typical measures used to judge advertising effectiveness.

Before Tests

1. Consumer Jury test

These tests are based on the rating given on advertisement by a typical group of consumers. Rating implies comparison of one advertisement with several others. A consumer jury test is conducted in a variety of ways. The usual procedure is to ask a relatively small group of consumers who represent potential buyers of the product to rate alternative pieces of copy. Different data collection methods may be used in implementing a consumer jury test. Personal interview may be used or a group may be assembled and the theme may be placed on the cards. The respondents are then asked to rate the different alternatives.

Order of merit method and paired comparison method are the common method of consumer jury tests.

Order of merit method

It consists of asking the respondents to decide which of a group of advertising is the best, which is the next best and so on. Thus the order of merit ranking contains the assumption that the respondent will like at least one advertising.

Paired comparison method

This paired comparison method requires each respondent to state his preferences for each advertisement relative every other advertisement in the tests. This gives a number of choices.

The advantages of the consumer jury methods are the following.

1. It separates weak advertisement from the very strong ones.

2. It is flexible and can be done quickly with best expenditure.

Rating scales

This method requires the establishment of standards for effective copy and numerical weights for each standard. The weights and values indicate the relative worth of a standard in the overall success of a copy. Advertisements are then rated according to scale value and a numerical score is obtained. If the total weight for one item is 10, researcher might give one advertisement 8, if it is above average on that. It helps to separate good and bad elements in an advertisement, it provides a list against which an advertisement can be checked.

The disadvantages are (1) while the scale items may be well selected, it is difficult to set up relative weights regarding their contribution to the ideal advertisement. (2) different judges will rate the items differently leaving the question of who is right and (3) high scores may not be an indication of success.

Portfolio tests

These tests are named since the advertisements to be tested are "packaged". A mixture of test advertisement and control advertisements is placed is a portfolio. At times they are actually placed in dummy copies of newspapers or magazines. Representatives of target audience are given the folio and asked to go through the read-

ing whatever advertisement interests them. Once, this task is compared, the respondents are asked to recall the advertisements that they can remember. Additional question may be asked about believability of the claims in the advertisement, the general reaction to the advertizement and whether the respondent used the product.

This test is also used to test the merits of two or more alternative advertisement. In such cases, an experimental design is used in which two or more sets of folios are prepared. One set contains test advertisement 'A' and another set contains test advertisement 'B'. By using small matched samples and comparing any play back scores among the various groups, a " winner" is obtained.

Psychological tests

Advertisement effectiveness depends upon the results which are achieved in the minds of individuals exposed to the advertisement. Advertisement can invoke a list of reactions such as self pity, security, fear or nostalgia.

Psychological tests employ a variety of research techniques, including word association, sentence completion, depth interviewing and story telling. A number of these techniques are employed in the some study. Such studies can be undertaken either before or after the copy has run. Only skilled interviewers can develop, train and implement such tests.

Physiological tests

An individuals physiological response to advertisements are obtained through physiological test which make use of laboratory equipments. Two such tests are the galvanic skin response and the eye movement. Advertising effectiveness is judged on the basis of the arousal it registers. This method is not used much in copy testing. Another drawback with this method is that arousal does not mean favourable reaction.

Enquiries

Some advertisements are designed to produce direct results such as sales or enquiries. In such a case, it is necessary to have previous data that provide a basis for estimating sales that will result from a given number of enquiries. A large number of enquiries does not necessarily mean that the advertising is successful.

Enquiry test may be handled in the following ways.

1. The same offer may be planed in different places of copies which are placed in different issues of the same medium.
2. The same offer is planned in different advertising copies of which appear in different magazines and newspapers.

Sales tests

Sales test may be conducted in a number of ways. Consumers are exposed to alternative pieces of copy through point of purchase displays. It requires two matched store samples. Product sales would be measured in each store before and after the introduction of the appropriate display. The changes in sales between the two period for the two store samples would be compared and that group with the largest increase would be presumed to have the best copy.

Similar experimental design studies can be conducted by mail using coupons.

Such tests have important limitations. They measure only short term efforts; the measuring instrument may not be sufficiency sensitive to defect relatively small difference in sales. They are time consuming. They are very expensive. They are artificial

After tests

An "after" test is one concerned with total advertising effectiveness. "After" tests may be designed in a number of ways. All of them, with the exception of enquiry and sales tests are based on the respondent's memory.

Recall tests

This type is commonly made to measure the effectiveness of advertising messages. The term recall means that "the mental reproduction of same target item experienced or learned earlier. Same contextual one is provided and the respondent must retrieve the target item from memory." Recall scores reflect the advertisers, ability to register the sponsors name and to deliver a meaningful, message to the consumer. This method assumes that the recall tests measure selective exposure, perception and retention by the respondent.

Recognition tests

Recognition is the awareness of having experienced the stimuli previously. In recognition, the larger item is asked to retrieve the earlier experience. Recognition tests have been used extensively in the measurement of print readership. One of the most widely used advertising rating services, uses this method. Its procedure consists of asking qualified readers of given magazine to point out what advertisement they saw and read. If an advertisement is reported as "noted", then the respondent is asked to indicate what parts were read.

The Advertizing Research Foundation, Wells, Lucas and Britt and Kragman contributed much to the understanding of recognition and recall tests.

Media selection

The goal of the advertiser is to select a media schedule from among the many available alternatives which maximum the number of people reached. Such a decision involves the following considerations.

1. The frequency of message exposures.
2. The maximum number is the target market that can be reached with that frequency.

The problem of media selection is confounded because

1. It is necessary to choose among the major media -types such as newspapers, bill boards, magazines, radio, television etc.,

2. Specific selection must be within each general type.

3. In magazines selections must be within each general type.

4. In radio and television, the stations, programmes, days and timings of the day must be chosen.

Another important consideration in making media comparisons is to distinguish between prospective buyers. To estimate the non-prospective the lawyers the advertiser must pay attention to increasing the effectiveness of the advertising message as follows.

1. Vehicle distribution: It refers to the circulation of individuals medium- the process by which it becomes available.

2. Vehicle exposures: This deals with the exposure of people to the vehicle - watching a particular television, programme and reading a given issue of a magazine.

3. Advertising exposure: It deals with the exposure of audience to the advertisement.

Advertising perception

It requires that the audience has conscious awareness of the advertisement. Perception of print of advertising is affected by the size, color and position of the advertisement a well as the thickness of the vehicles. Measures are influenced by product interest and present usage and prospect status.

Advertising communication

The audience receives the message in a desired content.

Sales response

It is a difficult measure to do.

Media audience

In selecting media, the objective is to find the most efficient vehicle for carrying the message to apotrential buyers. This necessitates a determination of both the sizes of the audience delivered by affirmative media and the characteristics of these audience. Readership studies are used to obtain such information for print media.

Print media

The Audit Bureau of Circulation reports that the paid circulation of a medium depends upon the number of home subscribers and the number of news and sales. But circulation does not provide information about the number of readers. The recognition method defines readers as individuals who are exposed to any of the editorial contents of a given issue.

In the editorial interest method, the respondents are shown actual issues of the various magazines which are scrapped to advertising and reguler features. A number of articles unique to the issue being studied are shown to the respondents. The question is asked whether this is the first time the respondent booked into the issue. A respondent is declared a reader only when he or she affirms having had prior exposure to the issue.

Media analysis used information on the duplication among magazines. Since consumer readership of three or more magazines is quite common, the problem of duplication is an important one. However so extensive study to determine duplication among all possible combinations of magazines is obviously inexpensive, time consuming activity.

Media analysis are interested in the ability of a given medium to generate page traffic, the number of person who will see the advertisements. The actual usage is called exposure.

Radio and television

It is difficult to measure the size of the audience as far as radio and television are concerned. The programme and advertising message are often mixed. It is difficult to differentiate between the two. There are four basic ways to measure the size of the audience for any radio and television programme. They are discussed below.

Coincidental method

In this method, respondents are called and asked whether any one in the home is listening to the radio or viewing television. If so, what programme and stations are turned. It is also asked "what is the name of the sponsor or product being advertised? This method measures average audience. This method has the advantage of speed and economy. However it has severe limitations. Since only homes with telephones are included, rural homes are not included in the sample. The procedure does not produce any continuous information about the audience.

A third limitation is that this method is limited to certain hours of day and night, such as after 8.00 A.M., and before 10 P.M. Hence, telephone coincidental method can not measure programmes not included in this time span.

Roaster recall

This is a technique which consists of aided recall through personal interviews. The interviewing is does shortly after the particular time period. A list of programme is used to aid respondents to remembering what programmes were listened to or viewed.

The ratings obtained by the use of the roaster recall method are dependent upon memory and subject to the status enjoyed by the programme. This method does not provide any continuous information about the nature of the audience. The respondents are queried about only a short time span hence duplication analysis can not be made.

The audiometer

The method derives its name from the machine which is an electronic recorder. This machine is attached to a television set without interfering with its normal operation. It records on a tape when the set is turned on and also records to what station it is turned. Time duration is also researched so that a continuous record of the use of the set is available with the machine.

The audience sample remains the same from month to month to a measure of the cumulative audience is possible. The data covers a long period and hence duplication study can be made. Data can be broken down by such household characteristics as region, city, size age of male head, total family income and presence of children.

Diary method

In this method, the respondent record radio listening and television viewing in a specially designed diary. The panel members will co-operate with the respondents at the time the programmes are played. This method can not provide a precise mixture-by minute audience flow as does the audiometer. A continuous panel operation can provide much useful duplication data.

Media models

Media models try to maximize some measure of advertising have exposure which is assumed to have impact on sales. Such models report for a given advertising schedules, the number of

individuals or house holds exposed and the number of times they are exposed. Some models provide reach and frequency of exposure for each media schedule.

A number of computerised media models now have been developed. These models start by putting into the compares detailed information about the market for the product and key segments. These models are handicapped by the lack of current and accurate input data.

Model question for guidance

1) Explain the various types of advertising research and their uses.

LESSON - 12

MARKET AND SALES ANALYSIS RESEARCH

Market and sales analysis research covers the identification and measurement of all those variables which individually and in combination have an effect on sale. Activities such as measurement of market potential, sales forecasting, sales territory evaluation and measurement of sales, representative performance are included in market and sales analysis research.

Market potential analysis will apply to those studies of individual markets which seek to determine the sales potential within them.

Sales forecasting will be used to mean the prediction of sales of a particular product, company, branch office or other unit for a given time period.

Sales analysis will include the analysis of a company's sales to ascertain such things as distribution of sales by territories, by type and size of customer, by order size, to product and by combination, of these classifications.

1. Market potential analysis

Marketing managers are interested in obtaining sales potentials for each of the geographic markets it serves. The term sales potentials means "the maximum possible sales opportunities for all sellers of a good or service". When applied to geographical areas it means the maximum steps which will be generated by buyers in that area for some stated time period. Area potential can be expressed in absolute terms and as a percent of the total market.

While developing potentials substitutes must be considered. Market potentials and sales forecasts are not the same thing.

Market potentials refer to total sales possibilities. Depending up what conditions are assumed different potentials can be arrived.

Allocation of marketing resources

The primary use of information on market potentials has been in the allocation of marketing resources, especially the allocation of salesmen. All setting effort namely sales forces, advertising and non-advertising promotion should be affected only after a consideration of potentials in most simple situation, a market with 10% of the total potential should receive 10% of sales effort.

However, potentials do not reveal the competitive structure of the market and the firms ability to exploit the market. Market responsiveness is a function of the potential, the competitive structure and the firms, input into the market such as adequate finance and managerial ability. However, a careful study of the potential and competitive structure should permit the firm to allocate optimum sales resources among alternative markets.

Defining sales territories

A sales manager tries to develop sales territories that are equal in sales potential and in work load so that each salesman has an equal opportunity to make sales.

Four terminal characteristics were typically used in defining territories namely concentration, dispersion, work load and market potential. The sales representatives work load is a function of a number of variables, including the number and size of accounts average order size, account, location, travel time between accounts and non selling activities required of the sales force. Through experience the company develops work load measures which coupled with sales potential, can move as the basis for designing sales territories.

Setting sales quotas

Once market potentials and sales territories are established sales quota should be set. Quotas are usually set for each sales territory and for each sales representative. While setting sales quotas, past sales performance, the increasing marketing effort offered by the company and the anticipated activities of the competitors should be taken into consideration.

One must bear in mind that the setting of quotas involves a complex interpersonal relationship between the sales manager and the salesman, Salesman differ in personal reactions to the challenge. and risk implied by quotas, the manager must determine quota bio-activity to each salesman.

Methods for measuring market potential

Two major methods are available for estimating market potentials. One of the methods use direct data on the actual for which one wishes to estimate potentials. The other method involves the use of corollary data. Corollary data can use single or multiple factors.

1. Direct data method

Total industry sales of a particular type of product can be used as the basis for estimating market potential for one brand of that product. Total industry sales in broken down by the firms sales territories. The percentage distribution is used as a measure of the relative potential existing in each of the firm's territories. These percentages are applied to the firm's estimate of its total sales to arrive at a potential for each industry.

Illustration of the use of direct data method

Company sales territory	Total industry sales		Company potential	Actual sales
	Volume (Rs. 1000)	Percent, Company		
1	104	3.13%	30,300	24.140
2	208	6.25%	60,500	56.110
3	156	4.69	45,400	47,300
4	312	9.38	90,800	71,040
5	52	1.56	15,100	19,870
Etc.	-	-	-	-
	3,328	100.00%	968,000	1,023,600

Comparison of potential sales indicates this company is weak in sales territories 1,2 and 4 and strong in territories 3 and 5. Hence management can focus its attention at weak territories.

The principle advantage of using total industry sales to measure market potential is that actual sales are being used. This method is straight forward and does not requires as much clerical work as with some of other methods.

The most important limitation to this method is that there are very few commodities on which total sales are available.

Again, past sales are used to indicate market potentials. Past sales were effected with the help of certain advertisement and sales method Changes in these activities as well as changes in price and product may shift demand and redistribute total sales.

2. Corollary data method

It is advisable to turn to corollary data in the absence of data on the sales of individual products by desired geographical areas.

This method is based on the idea, if a given series of data (such as sales) is related to a second series of data (salesman employed) the distribution of the second series by market areas may be used to indicate the distribution of the first series in the same market.

a. Single factor indexes

Single factor indexes are the most simple of the corollary methods of market analysis. A typical example is the use of sales of one product to indicate the market potential of enther. This is a more apt to be satisfactory if the two items have a closely related demands -complementary demand. For example, the number of Chevioerlet cars can be used as an index of the potential for sales of Chevioerlet parts.

Factors other than sales of related products are also used in the corollary data, single factor method. Population and household data are frequently used to indicate market potentials, Disposable income is a general index often used to measure general potential for consumer goods.

b. Multiple factor indices or indexes

All market potential indexes are not developed from a single series. Some are combinations of several factors. Occasionally as many as 20 many of these combinations are developed by particular companies or industries to measure market potentials for their products. Some are developed by independent agencies as indexes of market potential for consumer products in general.

Special multiple factor indexes are designed to measure the relative potentials of different markets for a particular product. Such index have the advantage of taking into account several factors which influence the sales of the given product.

Many subjective decisions tend to be made in using the multiple factor procedure. Multiple regression analysis is frequently used to eliminate some of the subjective bias arising from the sample

factor method, such as determining the relative importance of alternative factors and the weights to be assigned for each factor.

c. General multiple indexes

They are developed by a number of organizations. They are constructed as indexes of consumer purchasing power and are presumed to be indexes of market potential for consumer goods in general. Comparison of different general indexes show significant variation in the potentials for the same markets.

A major weakness of general index is that it is general and is not designed measure the potential for a specific product.

d. Use of surveys to determine potentials

This procedure consists of projecting sample survey results to the total market through the use of published market data. The Standard Industrial Classification system (SIC) developed by the Federal Government of U.S.A provides a unique and effective way of projecting survey data.

All manufacturing industries are combined into about 20 map groups. 150 sub groups and 450 industries. The advantage of using that system is that the government publishes a wide variety of data by such groupings, and they are kept upto data.

In the survey procedure researchers use mail, telephone or personal interviews to obtain information on purchase by firms which have been identified as belonging to the appropriate SIC categories. This information is then projected to the universe of all firms in those SIC categories.

It is difficult to use the survey approach to determine market potentials for consumer goods and industrial goods.

Sales forecasting

Sales forecasting is a complex phenomenon. Any error is forecasting will have for reaching consequence. The sales forecast is

the favour around which significant decisions such as production, inventory scheduling, investment in plant and equipment, manpower requirement, sales force expenditure, advertising outlays revolve.

Methods of forecasting

Methods of forecasting vary from estimates made by executive or the sales force to more complex procedures involving trend analysis and regression.

1. Subjective methods

One of the simple methods of forecasting sales is to use the judgements of knowledgeable individuals, within the company executives, regional, manages and sales representatives. Forecasts made by company executives is quite common.

a) Jury of executive opinion

Some companies begin with executive making independent forecast of sales for a year. These forecasts are more than just guesses. These executives have considerable factual data available to them and they possess mature judgement. Thus the group of executives are brought together to discuss their estimates. Discussion will bring out new ideas and the group will come out with a general agreement. If it is not possible the chief executive will take the final decision

b) Sales force estimate

Another common method of forecasting is by means of sales force estimate. The sales representatives are asked to state the probabilities of setting various quantities of each product or product group in their territories. It is quite probable that they will receive inputs designed to help them make better forecasts from a variety of people including sales supervisors, product managers, company economists and market researchers. This help will include projections of the general economic climate, activities of competitors and the planned activities of the firm.

For short term forecasts, it is likely that sales representatives can do a better job because his knowledge of the probable demand of major accounts of the product over the next several months. It is the only basis on which a form can adjust is plans to the dynamics of the market place.

2. Objective methods

a. Trend analysis: A simple objective method of forecasting is the extrapolation of past sales trend. This method assumes that sales for the coming time period will be equal to correct level or that sales will charge to the same degree that sales changed from the prior period to the current period. These simple measures are reliable under stable conditions. The forecasting method assumes that some past pattern in sales can be identified and measured and it will accurately reflect what will happen in the coming period if quantifies the trend in such away to project it into the future. The researcher must bear in mind that each time series is made by of four factors. Long term trend, cyclical variations seasonal variations and irregular variations. The first three (trend, cyclical and seasons) can be projected to determine the sales pattern for the future.

b. Regression analysis : This can be used in sales forecasting to measure the relationship between a company's sales and other economic series. The automobile manufactures find their sales are related to personal income. To use this relationship in forecasting our sales, the manufactures must determine the degree of relationship. Here the problem is shifted from forecasting sales to forecasting the other factors. However, this indirect method has two advantages. A number of other factors such as general economic series and forecasts done by many experts can be advantageously used to predict sales. Second in some cases a lead lag relationship may be found between a related series and the company's sales. For example, income changes may proceed changes in auto sales by three months. When such a relationship exists, the correlation with the related series has a direct advantage.

Regression forecasts are considered highly accurate for short periods such as two years or less. It is more objective than the previous methods discussed. It relieves the executives and satisfaction to continue their regular operations.

a) Survey methods : This method is least use due to its expensiveness the time required and its problem of reliability. Surveys at the consumer level dealing with intention, to buy have contributed significantly to accurate forecasting. However limited accuracy can be expected of this method.

A better forecast can be made by combining one or two methods.

III. Sales analysis

Analysis of actual sales results is done in sales analysis. It is usually done on four bases - territory, product customer and order size.. The objective of this analysis is to find the areas of strength and weakness, the product which are producing the greater and the least results, the customer who furnished the most productive sales results and the size of the order which accounts for the firms business. Hence a company can focus on areas which bring greater return.

1. Sale analysis by territory

The first step is to decide on what geographical control unit can be used. The district is the typical of the choice between (1) district can be combined to form larger units such as sales territories and (2) market potentials are usually developed on a district basis since it is the smallest unit for which many items of data are available.

Both sales and market potentials are tabulated by territorial units. These territories in which sales fall below potential can be given special attention. Studies of unusual competition, weak sales force and lethargic selling effort can be done. Such points will help

the company bolster its weak areas and concentrate on potential areas.

2. Sales analysis by product

By eliminating weak products and concentrating on strong ones a company can often increase in profits substantially. An example is Hunt Foods which over a time period, reduced it product lines from 30 items to 5 items and it increased sales manifold.

A product abandonment decision must take into account such variables as market share trends, contribution margin, effect or volume as product profitability and degree of product complementarily with what items in the line PRESS, is a time sharing computerized model which assists the management in its product deletion decisions.

Product analysis may be particularly effective when combined with territory analysis. Combined with territory analysis of this type makes it much easier to spot the places where action should be taken.

3. Sales analysis by customer

Sales analysis by customer typically show that a relatively small percentage of customer's accounts for a large percentage of rates. Distribution cost accordingly must be applied to determine the smallest customer. The firm can increase its profitability by dropping customers smaller than these.

Analysis by customers combined with analysis by territory and product may be particularly helpful in pinpointing weak spots in a sales programme. Remedial action, can be taken because the precise point of weakness is known.

4. Sales analysis by size of order

Sales analysis by size of order may identify orders which are not profitable. Certain customers may require frequent order, each

for a relatively small quantity. If the customers require a great deal of service and attention by the sales representatives, the cost of securing and handling each order may be high. Such orders usually incur loss. Such analysis may extend to find territories, products and customers where small orders are prevalent. This may read to send minimum order size, to train sales force to develop larger orders or to drop certain territories, products or customers.

5. Distribution cost analysis

The objective of any distribution cost analysis the computation of potentials is to help the marketing management make better decisions regarding how to allocate the firms marketing resources. The potential in any area is a function of the number and work of prospective consumer, and since the cost analysis relates cost to scale of buying, the logical next step is to undertake a marginal analysis to determine which accounts within the area represent the most likely units on which to exert additional pressure.

The marketing manager must have knowledge of each major account. They must know if they are getting a greater or lesser share of an accounts potential and whether they have been applying increasing or decreasing accounts of marketing effort to the account. Through experiments they can estimate the likely results of applying addition of marketing effort to accounts of certain sizes provided the accounts potential is already reached.

Sales analysis must be made on various combinations of territories, products, customers and order sizes in conjunction with a distribution cost analysis.

Model questions for guidance

1) By what devices do you measure market potential.

2) Explain the methods adopted for the product sales analysis.

LESSON - 13

MOTIVATION RESEARCH

Motivation research is an important type of quantitative research. Motivation research is commonly associated with the investigation of the reasons for human behaviour. This type of research aims at discovering the underlying motives and desires, using in. depth interviews, word association tests, sentence completion tests, study completion tests and similar other projective techniques. Through such research the various forces which motivate people to behave in a particular manner or which make people like or dislike a particular thing can be analysed. It is a difficult job is practice and usually the guidance from experimental psychologists is sought in this regard. Such an approach generate results in non-quantitative form which are not amenable for vigorous quantitative analysis.

Marketing is basically concerned with satisfaction of consumers need and wants. As such, the firm is placed in a position to understand the motives underlying the consumer behaviour. Such as understanding will enable the film to select effective sale and advertising strategies and to plan its marketing programme efficiently. Finally the firms will find out effective ways to satisfy the customers.

Nature of motivation research

Motivation research is different from traditional research which is directed to find answer for specific question. In motivation research, the researcher can not make direct approaches to the consumers and get correct answers. The reasons behind this are.

i) the consumers do not know the true reasons.

ii) the consumers will not tall the reasons and

iii) the consumers may give illogical reasons.

Generally, the consumers are unaware of the 'true reasons for specific brand and product selections. For instance, if we ask the

cigarette smokers why they prefer a specific brand, the answer will generally be 'taste'. But the true reason may be different. Due to heavy advertisement, the consumers identify many products with a single brand. For instance, all photocopiers as "Xerox". So, if a direct question is asked, the consumers may not be able to give correct answer.

Many consumers may not tell the correct answer even if they know it. Deliberate misrepresentation occurs when the questions are sensitive or questions relate to status. Over estimation of income status, buying habits and suppression of facts like drinking and smoking habits are very common. For example a respondent of a motor cycle who knows well that it was selected by his wife may say he selected it because of its performance such as speed, safety etc., Besides, the consumers rarely give logical reason for their preference to products. All these make the researchers who approach the consumers directly to get correct answers.

The motivation research is conducted in a relatively indirect fashion and seemingly round about methods to determine the images and personality profiles of the consumers pertaining to concerned branch.

Kinds of information need in motivation research

It is difficult to say which information should or should not be included for carrying out motivation research. All inner conditions that play a dynamic role in a consumer behaviour and also information relating to perception, culture, society, personality and group influence form part of motivation research. However, the major fields of human behaviour regarding which information is commonly required in motivation research are attitudes, assumptions, sensations, image and motives.

Motivation research techniques

There are four techniques of conducting motivation research.

1. Non- disguised - structured techniques.

2. Non- disguised - non - structured techniques.

3. Disguised non-structured techniques.

4. Disguised structured techniques.

1. Non- disguised structured techniques

In this method, a standardized questionnaire is used to collect data. The purpose of the study is explained to the respondent. Three types of questions may be employed to collect data.

Single question method: In this method, a single question is asked with a variety of response choices. The respondent is asked to give one answer selected from various choices given to them.

Multiple question method : A number of questions are asked about the attitudes of consumers. Scores are allotted to each response and the total scores obtained give the attitude of the respondents.

Physiological Test : Various laboratory tests such as eye movement and pupil dilation are used to measure the attitude of people towards products. Only qualified and experienced people can use these tests.

2. Non - disguised non- structured techniques

These techniques use an unstandardised questionnaire. No predetermined questions are used in this approach. The purpose of the study is revealed fully to the respondent. There is a pre determined answer also. The interviewers ask questions and try to get spontaneous response from the respondents. This method is also called depth interviews, quantitative interviews, unstructured interview, non-directive interviews and focussed interviews.

A variation of this method is the non- directive approach. In this approach the respondent during the interview is motivated to reveal more and more details on the initial question. The interviewer must create a friendly atmosphere during the interview so that the respondent will feel and express the feeling without fear.

The disadvantage of this method is that the data collected is highly qualitative and so extremely difficult to interpret. But, the data obtained can be used as a source for hypothiesis development.

3. Disguised - non- structured techniques

In this method, the purpose of the study is not revealed to the respondent. A list of unstructured question is used to collect data. Only indirect questions are asked to get true information. This art of using disguised and unstructured method is called projective technique. The projective techniques were initially used to analyse the minds of abnormal patients by the clinicians. A number of projective techniques are available to the market researchers.

1) Word association test

2) Sentence completion test

3) Story completion test

4) Pictorial test

5) Ink blot test

1. Word association test

The interviewer calls a series of listed words one by one and the product quickly replies with the first word that comes to his mind. The underlying assumption is that by " Free associations" with certain stimuli (words) the respondent will reveal his inner feelings about the subject being studied.

2. Sentence completion

Sentence completion test is smaller to word association test except that the respondent is required to complete as unfinished sentence, For example, I prefer this, soap because "This soap is used but only.....'. I do not use this soap because ......'1. Few unfinished sentences like this are given to know the attitude towards the various brands of soaps. The respondents are asked to complete such

sentences. By doing so, he projects himself and also answers for some one else. For example a person may complete the sentence'. I do not use this soap because it is used by only rich. With this answer we can interpret that the respondent is poor.

The hidden motives of people get projected in completion of unfinished sentences. If the sentences are chosen with un most care valuable information can be obtained.

Story competition

In this method, the respondent is provided with an incomplete story and asked to complete it. By doing so, the respondents attitude towards a specific product or after service, warranties etc. can be ascertained. The buyer will vigorously express his attitude while completing an incomplete story. Such attitudes, will not be expressed by the same buyer in such a vigorous and frank way to asked directly. This methods help to know the feelings of the people towards a company's product and also in finalizing the advertising and promotional items for the products.

Picture frustration test

This technique was developed by Rosenweig. In this test a respondent is shown a cartoon type picture involving two characters. In each picture a frustrating situation is there accompanied by verbal remarks. A blank space is provided and respondent is asked to fill it.

Theorematic apperception test

In this test, cards containing vague picture are shown to the respondents. They are asked to interpret the situation with regard to a particular product, company or other business phenomena.

Rorschah test

In this test, an ink blot is put on a card and the respondents are asked to look at the inkblot and tell his view point after

interpreting what he sees in the inkblot before him. This not in much use in marketing research.

Disguised - structured techniques

This method is used when the respondents might not readily and accurately express their attitudes, Respondents are given questions which they are not like be able to answer correctly. For example we can use this technique to measure attitude to world management labour relations.

Limitations

The designing and administering of these techniques need qualified and experienced researchers. Such personal are hardly available.

Generally, small samples are taken for conducting motivation research. So generalization drawn on this basis may be misleading.

In India, consumer behaviour is changing. Such changes are not resulted to ney particular class but it spreads to all state of society.

Marketing research programmes, hence, takes into consideration the changing consumer behaviour and incorporate motivational research to find out the "why and "how" of consumer preferences. In India, marketing research work is carried on by advertising agencies Advertising agencies now focus their attention on motivational research before planning their campaign. Indian consumers are quality conscious now-a-days. When he selects any consumer our cables like T.V., refrigerator, radio and V.C.R. and the books for special features in term brand loyalty also plays a key role in buying decision. This aspect is quite evident from the advertisements that appear in newspaper. Whatever be the product, cars, scooters, cycle, radios, soaps, typewriters, fertilizers-the advertisement reflect the changing consumer behaviour and the results of some motivational research on the part of the advertising agencies.

Motivational research is also used by advertising agencies in the problem defining phases of the research process, Informal investigation is conducted at this stages with the help of qualitative interview so as to understand the respondents attitude, knowledge and experience so as to understand the respondents attitude, knowledge and experience with the particular product. The manufacturers are also interviewed to generate information regarding the usage of the product, nature of the consumer and the principal appeal of the product. Again the interviewers cover the actual user of the product to generate information.

Motivational research has made tremendous progress in the western countries but reports as motivational research are rarely quantified of expressed in reasonable terms. They represent interesting reading but no action could be taken as the basis of such report.

In India, marketing researchers are aware of the studies made elsewhere. Motivational marketing research should be developed jointly by a team of psychological and social scientists. He would provide the specialized knowledge which is necessary to extract the indulging meaning of the research. The marketing man should see to it than the findings of motivational research do not overlook any marketing implications. Once it is done, motivational research will become a significant tool of marketing research.

Model question for quidance

1) Explain the various motivation research techniques.

LESSON - 14

FUTURE OF MARKETING RESEARCH IN INDIA

1. Introduction

Marketing research has assumed great significance in business activity in India. Many marketing firms have emerged since 1911 in India. These firms conduct marketing research on projection projects basis for various organization at nominal changes. The Hindustan Thompson Association Ltd., has been doing remarkable service in this field Operations Research Group. Marketing Research and Data processing consultants, Marketing Advertising Associate, Private Ltd, Marketing Services (India), Market Analysis and product Promoters. Sista Private Ltd. Everest Advertising Private Ltd. National Advertising Ltd., are some of the firms engaged in marketing research activities.

The public sector corporation are spending huge sums on marketing research. Public sector banks and government departments such as Post and Telegraph and Railways also sponsoring research projects. Government is constructing its urban and rural market indexes with the help of marketing research data. Institution such an university and colleges and individuals such as executives, academicians and students of commerce and marketing are involved in conducting marketing research. Many students out marketing research as their career by joining business organizations as marketing research executives or starting their own marketing research agencies.

2. Data Source for marketing research in india.

3. Data collection by Government Agencies

Government agencies collect data for numerous purposes and in fact they have the most anthentic data regarding population occupation, land ownership, crop patterns, irrigation, education, health, livestock etc.

2. The Gazetteer of India

The Gazetteer of India is the authentic source of secondary data for marketing researcher. The Gazetteer is a monumental publication and each state government has the Gazetteer with one volume devoted to each district. The Gazetteer provide information relating to agriculture, irrigation, industries, trade, banking, communication revenue administration, education, culture, public health service etc.

3. The credit plans of public sector banks

The credit plans prepared by Lead Banks is each district provide district wise and block wise profile and information regarding economic environment in each district and block. The credit plans are rich sources of information for marketing research organizations.

4. Private Organizations

Private organization collect and publish data essential for conducting marketing research. The Thompson Urban Market Index and. The Thomson Rural Market Index. see the two publications which are the basis of marketing research in India. These publications are the most exhaustive and authentic secondary source, besides for Government Publications. The Thomson Urban Market Index is a unique reference guide which covers all markets over 20,000 population. It gives a brief description of each town and 38 kinds of indicators. In Thomson Rural Market India, each district is taken as a basic unit and it has covered 234 districts. Indicators such as, literate main, literate female, cultivators, non-agricultural workers, cropped area, irrigated area, rain fall, still fertility and livestock have been used in the compilation of the rural index. This is an extremity useful document for planning rural marketing projects.

5. Present trend

In India, marketing research is not as well designed as in advanced countries of the world. The Indian manufactures do not use the marketing research in all decision making.

MARKETING RESEARCH USED FREQUENTLY / ALWAYS

Areas	Percentage of respondents
New product decisions	58
Estimating market share	49
Gathering competitive information	47
Demand estimations	46
Product modification decisions	44
Measuring customer satisfaction	43
Product positioning decisions	42
Diversification decisions	40
Market segmentation decisions	30
Advertising theme/ Message decisions	31
Pricing decisions	30
Customer service decisions	27
Product elimination decisions	21
Evaluation advertising effectiveness	20
Channel modification decisions	9

It is evident from the table that marketing research is used widely in areas such as new product design, estimating market share gathering competitive information and demand estimation. In other areas marketing research is less frequently used.

4. Factors influencing the growth of marketing research

Marketing research is more to grow in future in India. Several factors influences the growth of marketing research. Some important factors are discussed here.

1. Product life cycle

The life cycle of the product is generally short. Once the new product succeeds. It attracts competition and many new firms asks the market. Added to this, manufacturers limited the new products and supply the products at lower rate. This leads to depressed sale and hence the product has to be modified intensively for survival or abandoned. To survive in the market, the manufacturer has to collect data on the competition's strategy, the nature of product that will be demanded by the customer etc. For this purpose he has no undertake marketing research.

2. Changing consumer behaviour

The needs, taste and values of consumers are changing very fast. In order to cope up with the changing trend, the manufacturers have to collect reliable information so that they can design the product and package, maintain the quality of products, fix the price and decide the channel of distribution. The Indian consumers are becoming conscious of quality of goods and aware of their rights. They form association to protect their interest. Marketing research becomes necessary to gather information, analyse them and take contact decision to meet the last changing trend.

3. Expansion of rural markets

Marketing operation of trading and manufacturing companies was largely confined to urban areas. Due to intense competition in urban market the manufacturers have stated exploring rural market. The increase in the level of income of people in rural areas due to technological blank through in agriculture, the spread to literacy and education and development of communication facilities like radio, T.V and cinema have resulted in change in

behavioural pattern of rural masses. The villagers have already demonstrated their willingness to buy new consumer goods like transistors, ready made garments, furniture, electrical goods, electronic items etc. The changing attitude is a unique opportunity to business to expand the market for their goods in rural areas. The problems of selling in rural areas are different. The villagers and subject to traditions habits preferences and social pressure. To develop strategies to enter rural market, the manufacturers have to undertake marketing research.

4. Use of computers

The computers have increased the speed of processing and nasalizing of date. The application of sophisticated statistical techniques for analysis had made the results accurate and reliable. In order to find quick and definite answer to complex marketing problems the manufacturers have to undertake extensive marketing research.

5. Future Trends

Personal interviewing is becoming costly affair these days. There are other problems like refusal to interviewing, out at homes, bias of interviewers and interviewers etc., Problems in personal interview are increasing due to a variety of reasons. So, personal interview as a method of data collection may not yield expected result.

In mail survey, there are problems like prolonged waiting, failure to get response, higher postal expenses etc. So mail survey may not be a useful tool for collections or data

Telephone interview would be used extensively for collection of data in future. It would be easier to contact the respondents and to hold the respondent for longer period over phone. The extension of communication facilities to villages and remote corners of the country and the efficiency of telephone interview makes it a popular method of data collection.

Some other methods has to be used for collection of data. Interactive interviewing is a modern technique used to get information from consumers. In the technique, a key board would be provided to consumers which can be attached to T.V. sets. So pressing the keys on the board, the viewers would be able to get a particular programme. The viewers could request certain items to be displayed or even order for merchandise. The manufactures could get necessary information from the consumers an request. It is predicted that the use of this system would be common in near future.

Physiographic research is another area which is going to be of great help to the marketing researchers. Several new devices like voice pitch analyzer, brain wave measurement have come up. These devices help to measure the amount of stress a person registers when he makes a statement and various types of message that the human body gives off etc.

Motivational research is another area which has to be paid attention by the marketing researchers. The consumer behaviour is changing in India with the rise is general standard of living. There is a constant desire for betterment, and demand for more and new products. Modern fashions do not remain with the rich people. They percolate to all levels. Marketing research programmes, therefore, have to take into consideration the changing customer behaviour and accordingly incorporate motivational research.

Marketing research is largely undertaken by advertising agencies in India. There are a very few specialized agencies doing only marketing research. Specialized agencies which will specialize in certain techniques or aspects of marketing research will develop in future.

Model questions for guidance

1) Explain the factors that influence the growth of marketing research in India.

2) What are the data sources that exist in marketing research in India

MARKETING RESEARCH

Model Question Paper

Answer any five questions :

Marks : 5 x 20 = 100
Time : 3 Hours

1. Definite marketing research highlight the nature and scope of marketing research in today's marketing management.

2. Discuss briefly the different methods of marketing research.

3. Explain the experimental method of marketing research. what are its advantages and disadvantages.

4. Discuss the various methods of data collection pointing out their salient features.

5. Highlight the different approaches used to measure consumer attitudes. Describe different versions of rating scales with suitable examples.

6. Define sampling. Explain various methods used in selecting a sample from the population. Write their merits and demerits.

7. What is x^2 test? Under what conditions can it be used? Point out its uses to marketing researcher.

8. What do you understand by 'Motivation research'. What techniques can be used to carry out motivation research.

9. Differentiate between sales analysis, and market analysis by giving suitable examples.

10. What research investigations are required while introducing a new product in the market? Explain.